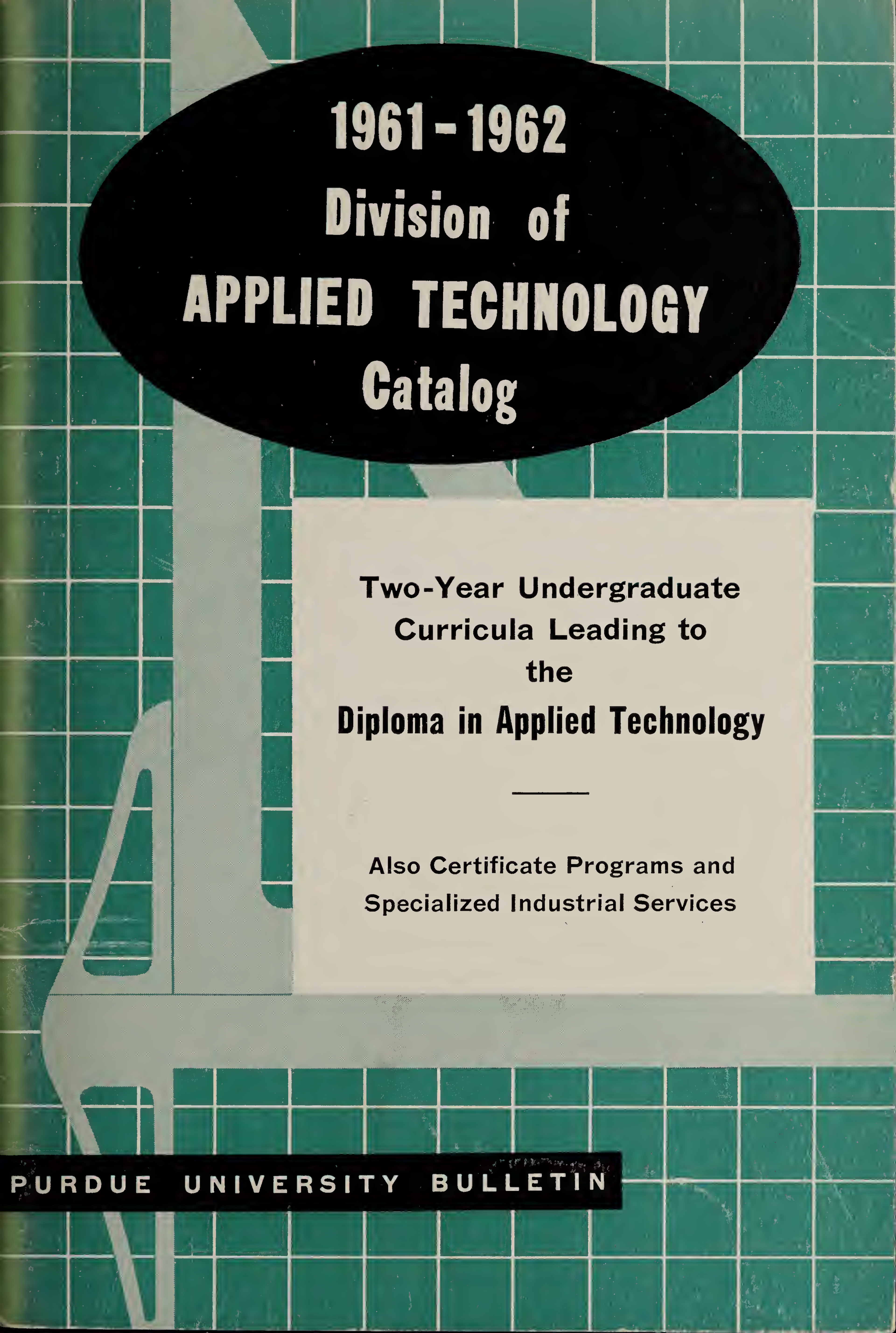

1961-1962
Division of
APPLIED TECHNOLOGY
Catalog

Two-Year Undergraduate
Curricula Leading to
the
Diploma in Applied Technology

Also Certificate Programs and
Specialized Industrial Services

PURDUE UNIVERSITY BULLETIN

UNIVERSITY CALENDAR

1961

SEPTEMBER

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OCTOBER

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1962

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First Semester

September 10-12
Orientation for all new students

September 13, 1 p.m.
Classes begin

November 22, 1 p.m.
Thanksgiving vacation begins

November 27, 7 a.m.
Classes resume

December 20, 1 p.m.
Christmas vacation begins

January 3, 1 p.m.
Classes resume

January 20, noon
Classes end

Second Semester

January 29, 1 p.m.
Classes begin

March 24, noon
Spring vacation begins

April 2, 7 a.m.
Classes resume

April 22
Early placement testing

May 30, 1 p.m.
Classes end

June 3
Commencement

Summer Session

June 11-29
First Intensive Session

June 18-August 10
Regular (Eight Weeks) Summer Session

July 2-August 10
Six Weeks Session

July 4
Independence Day Holiday

July 2-20
Second Intensive Session

July 23-August 10
Third Intensive Session

August 13-31
Fourth Intensive Session

PURDUE UNIVERSITY BULLETIN

Volume 61 January 16, 1961 Number 11

Entered at Lafayette, Indiana, as second-class matter, under Act of Congress of August 24, 1912. Issued at Purdue University 24 times a year: five times in January; four in February; three in March; twice in April; once each in May, June, July, August, September, and October; twice in November; and twice in December.

Division of Applied Technology
Announcements for the Year 1961-62

PURDUE UNIVERSITY

Calumet
Fort Wayne
Indianapolis
Lafayette
Michigan City

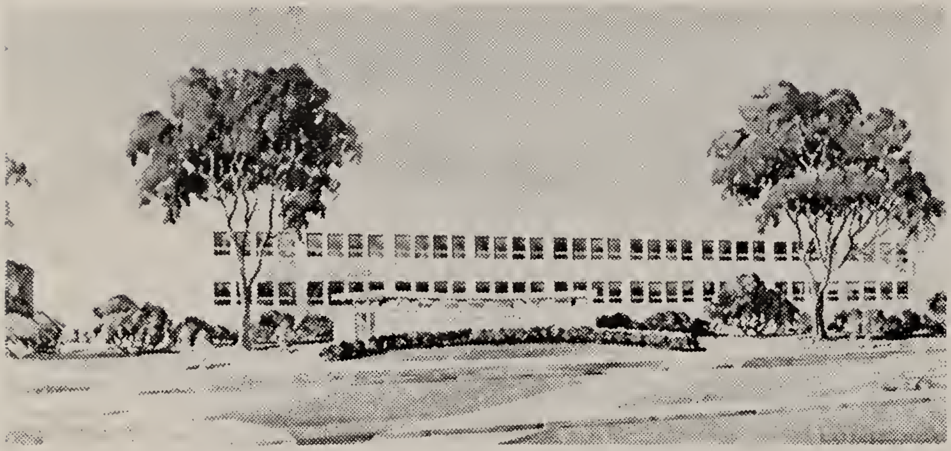
Eighty-seventh Year

LAFAYETTE, INDIANA

PUBLISHED BY THE UNIVERSITY

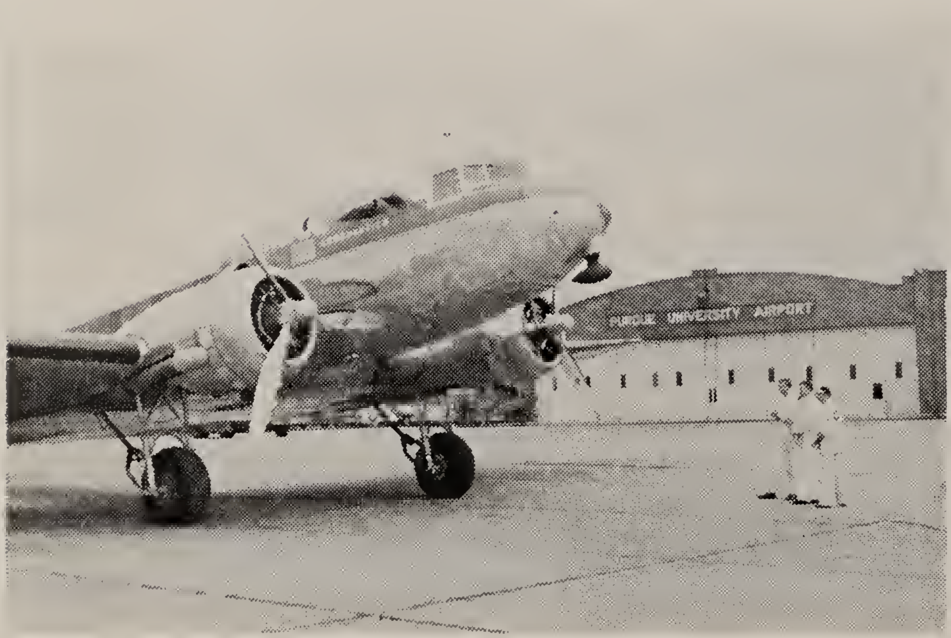
Purdue Calumet Center at Hammond

Purdue University Fort Wayne Center



Purdue Indianapolis Center

Purdue University Barker Memorial Center at Michigan City



Purdue University Airport

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PURDUE UNIVERSITY
Division of Applied Technology
Lafayette, Indiana

OFFICERS OF ADMINISTRATION AND INSTRUCTION

ADMINISTRATIVE OFFICERS

Frederick L. Hovde, B.Ch.E., M.A., D.Sc., LL.D., D.Eng., D.H.L., D.C.L.	President
Robert B. Stewart, A.M., LL.D.	Vice President and Treasurer
Donald R. Mallett, Ph.D.	Executive Dean
Lytle J. Freehafer, A.B.	Business Manager and Assistant Treasurer

UNIVERSITY EXTENSION ADMINISTRATION

C. H. Lawshe, Ph.D.	Dean of University Extension; Director of the Summer Session
F. K. Burrin, Ph.D.	Assistant Director of Summer Sessions and Evening Classes
G. E. Davis, Ph.D.	Director, Division of Adult Education
J. R. Maris, B.S.	Head, Department of Aviation Technology
L. O. Nelson, Ph.D.	Assistant to the Dean of University Extension
N. M. Parkhurst, M.S.	Registrar
H. C. Rountree, B.S.	Head, Department of Engineering Technology
D. A. Scott, Ph.D.	Assistant Dean of University Extension
H. W. White, M.S.	Director of Admissions

CALUMET CENTER ADMINISTRATIVE STAFF (HAMMOND)

C. H. Elliott, Ph.D.	Director
R. J. Combs, A.M.	Assistant Director
W. A. Jones, Ed.D.	Adult Education Field Representative
R. M. Trumpe, M.S.	Student Affairs and Guidance Officer
W. M. Tackett, M.S.	Admissions and Registration Officer

FORT WAYNE CENTER ADMINISTRATIVE STAFF

R. L. Ewigleben, D.Ed.	Director
Carl E. Bickley, D.Ed.	Assistant Director
N. T. Cooper, M.A.	Admissions and Registration Officer

INDIANAPOLIS CENTER ADMINISTRATIVE STAFF

C. L. Larsen, Ph.D.	Director
R. F. Smith, B.S.	Assistant Director
W. E. Hanshew, M.S.	Admissions and Registration Officer

BARKER MEMORIAL CENTER (MICHIGAN CITY) ADMINISTRATIVE STAFF

R. F. Schwarz, M.S.	Director

THE DIVISION OF APPLIED TECHNOLOGY

Organization and Purpose

The Division of Applied Technology is a division of the University Extension Administration. It is charged with the responsibility for college-level courses and curricula of an applied science nature. In addition, it offers numerous special service courses and programs for adults who are pursuing a specific professional objective. The division has responsibility for all undergraduate curricula leading to the Diploma in Applied Technology. The University Extension Council is the faculty body that exercises academic control over these courses and curricula.

The division, though its name has been changed, has been in existence since 1943. It functions through two academic departments, the Department of Aviation Technology and the Department of Engineering Technology. Though its activities take place both on and off the campus, the majority of its offerings at the present time are at the four University Centers.

The Nature of Applied Technology

Scientific and technological complexity ranges over a very broad spectrum, extending all the way from extremely simple activity to highly complex and abstract activity. At one extreme is the pure scientist and the engineering scientist; at the other end is the mechanic and the craftsman.

The Engineer. A professional engineer's work is mostly mental in character. He studies and reasons and visualizes how new bits of knowledge may be put to practical use. The vast majority of engineers do not need manual dexterity with tools. Among the activities they engage in are design of tools, structures, mechanisms, circuits, or processes; the layout of industrial plants; the planning of industrial processes; research and development; administrative duties in production; sales planning and development; controlling the quality of manufactured products through testing and inspection; and planning systems for the distribution of power and for electronic communications.

The Engineering Technician. An engineering technician engages in work that requires some of the knowledge and skills of both the professional engineer and the skilled craftsman. He is required to know basic theories and to apply them in helping to solve the complex problems of modern industry. In this way the engineering technician carries out vitally important assignments and takes his place on the engineering team.

The engineering technician usually specializes in one aspect of engineering. He might, for example, work as a draftsman, a detail designer, a cost estimator, a production supervisor, a research assistant, a quality-control supervisor, a time-study man, an expediter, a technical salesman, or a production planner.

The Skilled Craftsman. The work of the engineer and the technician would be meaningless without the contribution of the skilled craftsman who carries out engineering ideas. A toolmaker, for example, fabricates a jig or die from a design conceived by the engineer and detailed by the technician. The electrician, pipefitter, welder, machinist, chemical operator, and surveyor's rodman likewise use their skills to carry out the work of the engineering team.

The Engineering Technician

Definition. The National Committee for the Development of Scientists and Engineers, appointed by President Eisenhower in 1956, has adopted the following definition of an engineering technician, "... the engineering or scientific technician is usually employed in (1) research, design, or development; (2) production, operation, or control; (3) installation, maintenance, or sales. When serving in the first of these functional categories, he usually acts as direct supporting personnel to an engineer or scientist. When employed in the second category, he usually follows a course prescribed by a scientist or engineer but may not work closely under his direction. When active in the third category, he is frequently performing a task that would otherwise have to be done by an engineer.

"In executing his function the scientific or engineering technician is required to use a high degree of rational thinking, and to employ post-secondary school mathematics and the principles of physical and natural science. He thereby assumes the more routine engineering functions necessary in the growing technologically based economy. He must effectively communicate scientific or engineering ideas mathematically, graphically and linguistically."

Need. Our present industrial and technological economy requires a fairly definite ratio of technicians to engineers. The ratio varies according to the nature of the industry, but the average requirement, based on several studies, is five technicians for every professional engineer.

Continued advances in scientific knowledge call for increasing numbers of people trained in science and engineering. Currently, industry is critically short of engineers. Some estimates call for 30,000 new engineers a year. With a technician-engineer ratio of at least 5 to 1, the need for technicians is obvious.

The demand is expected to increase. To make more efficient use of its professional personnel and to help ease the shortage of engineers, industry is placing more and more technicians in jobs that engineers have held in the past. This trend, added to the normal demands of industry, indicates a bright future for the engineering technician.

Recent graduates of Purdue's applied technology program have been employed in industry as junior draftsmen, detailers, tracer draftsmen, foremen trainees, experimental technicians, junior time-study engineers, assistant supervisors of engineering records, electrical testers, sample checkers, junior engineers, chemical laboratory technicians, estimators, job analysts, architectural draftsmen, construction inspectors, building inspectors, manufacturers' agents, personnel interviewers, tool and die designers, machinery analysts, power station operators, and technical salesmen.

APPLIED TECHNOLOGY CURRICULA

Applied technology curricula are college-level programs that specialize in the education of technicians.

In America the Engineers' Council for Professional Development (ECPD), through its Subcommittee on Technical Institutes, is the recognized accrediting agency in this field. It defines these curricula as follows:

"Curricula to be considered are technological in nature and lie in the post-high-school area. They differ in content and purpose from those of the vocational school on one hand and from those of the engineering college on the other. Curricula in this field are offered by a variety of institutions, and cover a considerable range as to duration and content of subject matter, but have in common the following purposes and characteristics:

(1) The purpose is to prepare individuals for various technical positions or lines of activity encompassed within the field of engineering, but the scope of the programs is more limited than that required to prepare a person for a career as a professional engineer.

(2) Programs of instruction are essentially technological in nature, based upon principles of science and include sufficient post-secondary school mathematics to provide the tools to accomplish the technical objectives of the curricula.

(3) Emphasis is placed upon the use of rational processes in the principal fundamental portions of the curricula that fulfill the stated objectives and purposes.

(4) Programs of instruction are briefer and usually more completely technical in content than professional curricula, though they are concerned with the same general fields of industry and engineering. They do not lead to the baccalaureate degree in engineering.

(5) Training for artisanship is not included within the scope of education of technical institute type."

Based Upon ECPD Specifications

The preceding definitions serve as the bases for operating the Purdue University applied technology curricula. Four curricula, to date, have been inspected and accredited by committees of the Engineers' Council for Professional Development.

Developed With Industrial Cooperation

Various courses are offered to cover the basic knowledge and practices of present-day industry. Industrial leaders have been consulted to learn the kind of specific technical information required by persons who takes jobs in industry. Many members of the instructional staff are drawn from local industries, but course administration, teaching material, and standards of instruction are under the direction of Purdue University.

Located at the Purdue University Centers

In general, the curricula are offered only at the Purdue University Centers—close to the needs of industry and their industrial employees. (The aviation programs are at the Purdue airport on the Lafayette campus.) Classes are usually offered for full- or part-time students in day or evening sessions.

Programs

The applied technology programs consist of:

1. *Day programs.* These programs are primarily for students with little or no industrial experience—directly out of high school or military service. They are of two years' duration and lead to the Diploma in Applied Technology in the curriculum studied. Students admitted to these programs are classified as regular students. See entrance requirements on page 9.

2. *Evening programs.* These programs are planned to serve industrial employees or others who, because of many reasons, cannot attend day school programs. These include:
   (a) *Diploma programs* in the selected fields of technology which lead to a Diploma in Applied Technology. Students admitted to these programs are classified as regular evening school students. See entrance requirements on page 9.
   (b) *Certificate programs* have been designed for the more mature adult either in industrial employment already, or desiring technical industrial employment. They are designed to be as concentrated and immediately practical as possible for students who have limited time or funds available for formal education. Students admitted to this program are classified as temporary students but upon completion of an approved program may continue in the two-year Diploma in Applied Technology program providing:

Civil technology students study use of instruments in surveying

   (1) The student qualifies for reclassification as a regular student.
   (2) Not more than 12 credit hours taken as a temporary student may be counted toward his diploma.
   (c) *Special service programs.* The Division of Applied Technology cooperates with individual industries or communities in the development and operation of specialized training programs. Such service is rendered without charges other than the regular fees assessed for student enrollment in classes. Since such highly specialized service courses are usually restricted to a single location and serve a special need, they are not completely described in this catalog and may differ to some extent in fees, advanced standing provisions, and other details from the general fields of study described in this catalog. Students admitted to this program are classified as tempo-

rary students but upon completion of an approved program may continue in the two-year Diploma in Applied Technology program providing the student qualifies for reclassification as a regular student. Not more than 12 credit hours taken as a temporary student may be counted toward his diploma.

STUDENT INFORMATION

Admission

Students may be admitted to applied technology curricula either as *regular* or *temporary* students. A regular student, upon satisfactory completion of a prescribed program of study, may be awarded the two-year diploma. A temporary student is not eligible for the award of this diploma.

Admission as a Regular Student. A student to be admitted to the University as a regular student must be a high school graduate and must present 15 units of secondary work.

The prescribed units must be distributed as follows:

English	3 units
History or social studies	1 unit
Algebra	1 unit
Plane geometry	1 unit
Science	1 unit
Additional English, language, mathematics, science, or social science	3 units
Other high school subjects	5 units
Total	15 units

Applicants who rank in the upper half of their graduating class may be admitted without examinations. Applicants who rank in the lower half of their graduating class may be required to come to the Center for examinations and interview.

A student meeting the above requirements except for plane geometry may be given provisional admission as a regular student *for one semester only,* with assignment to a noncredit course in plane geometry. A student provisionally admitted will be allowed to take a limited number of specified courses. To be eligible to continue he must remove his geometry deficiency and make a satisfactory record in other courses taken.

Admission as a Temporary Student. A student may be admitted as a temporary student to take specific courses for which he is qualified. Not more than 12 semester hours of work taken as a temporary student, however, may be applied toward meeting the requirements of the two-year diploma, in the event that the student is subsequently admitted as a regular student.

Advanced Standing. Applicants may be admitted with advanced standing:

1. By transfer of credits from other technical institutes or colleges or universities.
2. By passing special examinations in certain courses.
3. For studies carried on as part of civil or military training programs, and for correspondence study.
4. By evaluation of previous work experience.

Advanced standing, where granted, is stated in terms of the specific courses in which credit is allowed. Any student desiring advanced standing should make application in time for such credit to be approved before enrolling in other courses. The applicant for advanced standing will be given a statement in writing concerning the action taken on his request.

Nonresident Students. Indiana residents are given preference when enrollment is limited or classes are crowded. Otherwise, out-of-state students are admitted subject to the same conditions as resident students.

Permission to Register. The student should note that permission to register depends first of all upon being admitted to Purdue University. Authorizations from the Veterans Administration or other agencies are not to be confused with the official admission forms sent out by Purdue University.

Placement Examinations. Certain placement examinations will be required of part-time as well as of full-time students. The placement tests should not be mistaken for entrance examinations.

The University reserves the right to determine the beginning level of any student from such orientation or placement tests—whether it involves placement at an advanced or deficiency level in any subject field.

Procedure for Making Application. An application for admission must be made upon a form obtainable from the Office of Admissions, Purdue University, Lafayette, Indiana, or from the admissions office of one of the Purdue University Centers.

Such applications will require a transcript of the high school record and of any college-level credits for which transfer credit is desired. Students transferring from another curriculum at Purdue need not supply transcripts since all Purdue records are available. The applications should be entered as far ahead of the opening date of school as possible. A high school student should normally apply during his last semester as a senior.

The Admissions Officer will make a report to the applicant regarding the action taken upon the application.

Student Classification

Regular Students. Regular students are students who have met the admission requirements and are pursuing an approved plan of study leading to a diploma. Regular students may be enrolled on either a part-time or full-time basis—in day or evening classes.

Temporary Students. These are students who desire to receive the instruction without undertaking one of the regular plans of study leading to a diploma. Such students must present satisfactory evidence that they are qualified to receive instruction at the level of the courses desired and have the appropriate background, language skills, etc.

Student Loads. Students are not permitted to enroll for more than 20 semester hours of credit in any semester—unless by special permission. Working students should reduce their loads in proportion to their working time. For students working full time an average of six semester hours is considered normal and no more than eight semester hours may be taken without approval.

Plan of Study. Each student working toward a diploma or certificate should have a plan of study for the desired program which must be approved by a counselor at each registration. No minimum length of time is prescribed for

Building construction students find sketching useful in design courses

students to complete their work toward a diploma or certificate. The semester hours of credit for each student are permanently recorded in the office of the registrar of the University; these credits are cumulative toward a diploma or certificate regardless of whether the student is continuously enrolled in successive semesters or whether all the work is taken at one center.

University Fees

Since catalog copy is, of necessity, prepared several months in advance, fees are subject to change by the Board of Trustees without notice.

Fees and deposits for the programs included in this catalog are as follows:

1. Curricula in Aviation Maintenance Technology, Aviation Electronics Technology and Professional Pilot Technology—$250 per semester.
2. Curricula in Engineering Technology: (Courses numbered from 100 to 400)—$15 per credit hour plus $4 per laboratory hour.

   Example: (a) BC 164. Building Materials. Class 3, cr. 3. 3 x 15=$45.

   (b) DM 264. Machine Design II. Class 2, Lab. 3, cr. 3. (3 x 15) + (3 x 4)=$57.
3. (a) Specialized Services Courses: (Courses numbered under 100)—Fees for each course are listed with the course descriptions in this catalog.

   (b) Practical Nursing Program—

   Fees for first 16 weeks of classroom and laboratory instruction at Calumet Center—$175.

Courses scheduled during the four 8-week periods of each of the four cooperating hospitals are individually priced and listed along with the course descriptions.

Breakage Fees. Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage that may occur. Such special charges must be paid before course credit will be given.

Activity Fee. Full time students (those carrying 12 semester hours or more) pay an activity fee of $3 per semester. This is currently effective at the Calumet and Fort Wayne Centers.

Diploma Fee. Students in applied technology must pay a diploma fee of $5 not less than 30 days before the close of the semester in which they expect to complete their work for a diploma.

Special Examination Fees. By any student taking an examination to remove a condition—per course	$ 5
For advanced credit for students who are currently registered for more than seven semester hours (four or more in a summer session)—per course	$ 5
For advanced credit for students who are currently registered for seven hours or less (less than four in a summer session)—per course	$25

Withdrawal. In order to effect a withdrawal from any class, a student must notify the center office at the time of withdrawal. Discontinuance of class attendance is not the basis for withdrawal, and students who do not notify the office when they plan to withdraw will be given a failing grade in each course involved.

Refunds. Course fees will be refunded under any one of the following conditions:

1. Withdrawal during first and second weeks of semester, 80 per cent refund.
2. Withdrawal during third and fourth weeks of semester, 60 per cent refund.
3. Withdrawal during fifth and sixth weeks of semester, 40 per cent refund.
4. Withdrawal after sixth week of semester, no refund.

Students who register for a course and do not attend class will be withdrawn as of the first day of class and entitled to a refund of 80 per cent of the course fees paid.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

To be eligible for a refund the student must notify the extension office and apply for a refund at the center where he is registered at the time of his withdrawal.

Grades and Honors

Each student will receive from his instructors a grade for each course in which he is enrolled at the close of a session. The student shall be responsible for the completion of all required work by the time of the last scheduled meeting in the course unless his assignment to the course has been properly cancelled. The grade shall indicate the student's achievement with respect to the objectives of the course. The system is as follows:

Credit Courses:

A—highest passing grade

B

C

D—lowest passing grade; passing minimal objectives of the course.

E—conditional failure; failure to achieve minimal objectives, but only to such limited extent that credit can be obtained by examination or otherwise without repeating the entire course. This grade represents failure in the course unless changed during the following semester.

F—failure to achieve minimal objectives of the course. The student must repeat the course satisfactorily in order to establish credit in it.

For zero-credit courses (including thesis research but not including laboratory portions of courses in which, for purposes of scheduling, separate course designations and separate class cards are used for the laboratory sections):

S—satisfactory; meets course objectives.

U—unsatisfactory; does not meet course objectives.

For incomplete work, either credit or noncredit:

O—incomplete; no grade; a temporary record of work which was interrupted by unavoidable absence or other causes beyond a student's control, and which work was passing at the time it was interrupted. An instructor may require the student to secure the recommendation of the center director that the circumstances warrant a grade of incomplete. On the record a grade of O will be equivalent to a W unless changed during the following semester.

Directed grades. The registrar is directed to record the following grades and symbols under special circumstances:

W—withdrew; a record of the fact that a student was enrolled in a course and withdrew or cancelled the course after the last day for late registration and adding courses.

WF—withdrew failing; a record of course cancellation after the last day for cancelling a course without grade, at which time, according to a statement from the instructor, the student was not passing in his work. This grade counts in all respects as a failing grade.

A grade of WF may be directed by the center director, the head of the Department of Engineering Technology, or the head of the Department of Aviation Technology when a student is dropped from a course for serious scholastic delinquency.

V—Visitor; a designation in lieu of any other grade for any student enrolled in a course as a visitor without credit.

Work Toward the Four-Year Baccalaureate Degree

Students who obtain a diploma in Applied Technology are eligible for consideration for admission to curricula leading to the degree of Bachelor of Science in industrial education. Two-year graduates, who are qualified, may continue in the university by pursuing one of the following majors administered by the Division of Education.

1. **Training in Industry Major.** This program is designed for students who are primarily interested in becoming trainers in business and industrial organizations. It does not lead to a teacher's license, but instead it is planned to aid those who wish to prepare themselves for educational leadership within industry. This may include such work as management training, supervisory training, shop or on-job training, developing training programs, and a variety of other types of activity which are connected with educational work in industry.

2. **Industrial Arts Teaching Major.** This major is planned for those students who wish to qualify for a nonvocational license in (a) industrial arts (special); (b) industrial arts (comprehensive); or (c) general shop or special shop (restricted or conditional).
   Students graduating from the industrial education curriculum may elect to qualify for a license in industrial arts (special). If they elect to qualify for the license in industrial arts (comprehensive), they also must meet the requirements for a restricted or conditional license in at least one of the following other subject areas: biology, chemistry, mathematics, modern language, physics, social studies, English, history, physical education, or speech.

3. **Junior College and Technical Institute Teaching Major.** The increased demand for technicians of all kinds has brought about a greatly expanded need for instructors qualified to teach subjects in applied technology. Enrollment in this major area is open to those who are specially interested in teaching in junior college divisions of technology and in technical institute type curricula. The plan of study includes advanced courses in mathematics, science, and technology plus courses in principles of education, methods of teaching and course of study organization and planning. Students who enroll in this major may wish to continue professional study until they have earned the Master's degree in order to be better prepared for this kind of employment.

4. **General Industrial Major.** A student may prepare himself for employment in a variety of industrial occupations by satisfactorily completing the plan of study in this major area. Graduates may be employed as industrial supervisors, junior management trainees, production control specialists, industrial sales representatives, industrial casualty specialists, quality inspectors, inspection supervisors, and specialists in a number of industrial personnel activities.

Since the plans of study in each of these four year curricula differ, it is necessary that each candidate have his transcript reviewed by the Division of Education before a program can be arranged for him. Inquiries should be made to Prof. H. S. Belman, Industrial Education Curriculum, Education Building, Purdue University, Lafayette, Indiana.

TWO-YEAR UNDERGRADUATE CURRICULA LEADING TO THE DIPLOMA IN APPLIED TECHNOLOGY

Altogether nine two-year curricula are available. The aviation programs are offered only on the Lafayette Campus and the remaining six are available at the University Centers as indicated in the curricula descriptions.

The programs are identified as follows:

Curriculum in Aviation Electronics Technology	(AET)
Curriculum in Aviation Maintenance Technology	(AMT)
Curriculum in Building Construction Technology	(BCT)
Curriculum in Chemical and Metallurgical Technology	(CMT)
Curriculum in Civil Technology	(CT)
Curriculum in Drafting and Mechanical Technology	(DMT)
Curriculum in Electrical Technology	(ET)
Curriculum in Industrial Technology	(IT)
Curriculum in Professional Pilot Technology	(PPT)

Curricula for the nine programs of study are given on the following pages to guide students in making their own plans. Any plan differing from those shown must be approved by a counselor.

The number of courses and the total semester hours of credit required for the Diploma in Applied Technology differ for the nine programs. In all, except the aviation programs, however, approximately the same general organization has been followed. The program pattern includes:

A. *Fundamental courses*
  - Mathematics
  - Physics
  - Chemistry
  - Drawing
  - English
  - Industrial Management

B. *Nontechnical courses*
  - Government
  - Economics
  - Psychology
  - Speech

C. *Technical courses*
  - Specialized instruction related to the particular field of study.

A student desiring a diploma in any one of the fields must establish credit in each course listed or its equivalent. Courses not listed in the following curricula may be substituted for certain nontechnical or major field courses upon prior written consent of the head of the Department of Engineering Technology or the head of the Department of Aviation Technology. No substitutions for fundamental courses will be allowed.

Additional Study

Students who have met the requirements for the Diploma in Applied Technology are encouraged to take additional courses required by the increased responsibilities of their industrial advancement.

Usually these courses are offered in the evening and are therefore available to employed persons. Courses of this type are scheduled when there is sufficient demand to justify them.

CURRICULUM IN AVIATION ELECTRONICS TECHNOLOGY

Offered: Lafayette Campus only.

The Aviation Electronics Technology program is a combination of electrical technical subjects and general academic studies. This curriculum will produce a graduate competent in electrical and electronic trouble shooting, maintenance and service as associated with aircraft systems and communications. Emphasis is placed upon understanding the fundamental principles of electricity as applied to the aviation industry.

This is an intensive, practical two-year undergraduate college program offered by the Department of Aviation Technology.

Fees for this curriculum are $250 a semester, and cover registration, medical, infirmary, and student activity fees.

FRESHMAN YEAR

First Semester

Course	No.		Credit
MA	151	Mathematics for Engineers	5
Engl	101	English Composition	3
AT	131	Aircraft Electricity	3
AT	132	Electronics I	3
AT	135	Avionics Laboratory I	2
DM	108	Technical Drawing	2
			18

Second Semester

Course	No.		Credit
MA	152	Mathematics for Engineers	5
CE	113	Slide Rule and Graphs	1
Engl	202	English Composition	3
AT	133	Aircraft AC Electricity	3
AT	134	Electronics II	3
AT	136	Avionics Laboratory II	2
			17

SOPHOMORE YEAR

Third Semester

Course	No.		Credit
MA	221	Analytic Geometry	3
Phys	220	General Physics	4
Spe	114	Principles of Speech	3
AT	231	Aircraft Communication and Navigation Systems	3
AT	232	Electronics III	3
AT	235	Avionics Laboratory III	2
			18

Fourth Semester

Course	No.		Credit
MA	222	Analytic Geometry	3
Phys	221	General Physics	4
AT	236	F. C. C. Regulations	3
AT	233	Microwave Aviation Applications	3
AT	234	Electronics IV	3
AT	237	Avionics Laboratory IV	2
			18

CURRICULUM IN AVIATION MAINTENANCE TECHNOLOGY

Offered: Lafayette campus only.

The aviation maintenance technology program is designed to qualify high school graduates as aircraft and power plant technicians, and to give basic technical training as preparation for many industrial positions.

It is an intensive, practical two-year undergraduate college program offered by the Department of Aviation Technology.

The course work includes specialized courses in aircraft engines, aircraft fabrication, aircraft maintenance, aircraft accessories, and aircraft welding, as well as basic courses in mathematics, physics, English, and drafting.

The first year of study is devoted primarily to light aircraft maintenance and inspection and allied course work, with specialized lectures and laboratories in aircraft engines, accessories, and frames. During the second year, most of the time is devoted to providing the student with actual mechanical experience on "live" transport-type aircraft. This work is done in the Federal Aviation Agency—approved repair station operated by the Purdue Aeronautics Corporation. Beginning groups start in September of each year.

Fees for this curriculum are $250 a semester. This covers registration, medical, infirmary, and student activity fees.

FRESHMAN YEAR

First Semester

Course	No.		Credit
AT	111	Aircraft Welding and Materials	2
AT	112	Aircraft Engines I	5
AT	114	Aircraft Engine and Accessories	5
AT	113	Federal Air Regulations & Forms	2
ENGL	101	English Composition I	3
MA	111	Algebra	3
			20

Second Semester

Course	No.		Credit
AT	115	Aircraft Fabrication	5
AT	116	Airframe Maintenance I	5
DM	108	Technical Drawing	2
ENGL	202	English Composition II	3
MA	112	Trigonometry	3
CE	113	Slide Rule and Graphs	1
			19

SOPHOMORE YEAR

Third Semester

AT	211	Transport Aircraft Maintenance I	5
AT	212	Aircraft Engines II	5
AT	213	Aircraft Systems	3
PHYS	220	General Physics	4
SPE	114	Principles of Speech	3
			20

Fourth Semester

AT	214	Jet Engines and Accessories	5
AT	215	Aircraft Electricity	5
AT	216	Aircraft Propellers and Components	3
AT	217	Airframe Maintenance II	5
PHYS	221	General Physics	4
			22

Aviation technicians study both reciprocating and jet power systems

CURRICULUM IN BUILDING CONSTRUCTION TECHNOLOGY

Offered: Calumet Center, Barker Memorial Center (first year), Fort Wayne Center, and Indianapolis Center.

This curriculum is designed to prepare students for technological employment with contractors, building materials suppliers, architects, civil engineers, and related governmental agencies.

Emphasis is placed on construction materials and processes, specifications, regulations, estimating, surveying, frame and masonry construction, and architectural and structural drafting, as well as on related courses in mathematics and physical science.

Also included are courses dealing with some of the historical, economic, and human relations aspects related to the individual in our American industrial life.

Graduates are prepared to accept positions as estimators, expeditors, planning technicians, field inspectors, architectural detailers, architectural draftsmen, and sales representatives. With experience, after completing this program of study, graduates are now holding positions as field engineers, technical engineers, junior structural engineers, engineering assistants, shop superintendents, and real estate brokers. This field of specialization is well designed to help the student who is interested in going into the construction business for himself.

This program is accredited by the Engineers' Council for Professional Development.

FRESHMAN YEAR

First Semester

Course	No.		Credit
BC	104	Plan Reading	1
BC	116	Architectural Drawing	2
GN	100	Orientation Lectures	1
ENGL	101	English Composition	3
MATH	111	Algebra	3
PS	136	Physics: Mechanics & Heat	4
PSY	120	Psychology	3
BC	172	Systems of Construction	2
			19

Second Semester

Course	No.		Credit
BC	156	Frame Construction	3
BC	164	Building Materials	3
DM	212	Mechanics of Materials	4
CE	113	Slide Rules and Graphs	1
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound and Light	4
			18

SOPHOMORE YEAR

Third Semester

BC	204	Building Regulations	2
BC	220	Concrete and Masonry Construction	3
ECON	210	Principles of Economics	3
BC	288	Elementary Surveying	2
		Electives	6
SP	114	Principles of Speech	3
			19

Fourth Semester

BC	276	Specifications and Contract Documents	2
GN	268	Elements of Law	3
ENGL	421	Business Writing: Engineering Applications	3
BC	292	Estimating	3
		Electives	6
			17

Students will select a total of 6 credit hours, with advice of Lead Teachers from the following subjects

ELECTIVES

Third Semester				Fourth Semester			
BC	241	Architectural Design I	2	BC	242	Architectural Design II	2
BC	248	History of Architecture I	2	BC	249	History of Architecture II	2
BC	336	Reinforced Concrete Design	4	BC	256	Structural Drawing	3
BC	340	Construction Methods	4	BC	284	Heating, Ventilating, Air Conditioning and Illumination	2
BC	236	Architectural Projections	2	BC	266	Structures II	3
BC	265	Structures I	3	BC	278	Building Construction Practices	2

CURRICULUM IN CHEMICAL AND METALLURGICAL TECHNOLOGY

Offered: Calumet Center only.

This program of study has been developed to meet the needs of those whose interests are in the fields of chemistry and metallurgy. The plan of study has been worked out in such a way that all courses may be applied in either area.

This curriculum includes instruction in the fundamentals of industrial management, certain nontechnical subjects, mathematics, and physics, as well as in the major field of specialization.

Chemical and metallurgical technology is designed to prepare students for technological services in steel mills and metal processing and fabricating industries as well as for technician positions in general chemical and metallurgical laboratories and industries.

FRESHMAN YEAR

First Semester				Second Semester			
Course	No.		Credit	Course	No.		Credit
DM	108	Technical Drawing	3	CM	154	Industrial Chemistry	4
GN	100	Technical Institute Orientation Lectures	1	CM	184	Ferrous Metallurgy	3
ENGL	101	English Composition I	3	GN	52	Physical Education	0
PSY	120	Psychology	3	GN	152	Fundamentals of Technical Writing	2
MA	111	Algebra	3	MA	112	Trigonometry	3
PS	120	Introduction to Chemistry	3	PS	176	Physics: Electricity, Sound, and Light	4
PS	136	Physics: Mechanics and Heat	4	CE	113	Slide Rules and Graphs	1
			20				17

SOPHOMORE YEAR

Third Semester

CM	212	Industrial Chemistry: Qualitative	3
CM	228	Physical Metallurgy	4
CM	240	Heat Transfer	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			18

Fourth Semester

CM	252	Industrial Chemistry: Quantitative	3
CM	280	Nonferrous Metallurgy	2
CM	284	Metallography	3
PS	284	Instrumentation	3
GN	64	Physical Education	0
GN	232	Democratic Government	2
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
			17

CURRICULUM IN CIVIL TECHNOLOGY

Offered: Indianapolis Center only.

This program of study has been designed to prepare students for employment in fields requiring the technician's services in the organization of a land surveyor, the highway department, or a railway, as well as in other specializations of civil engineering technology.

Emphasis is placed upon the technician's part in surveying, highway layouts, steel and concrete construction, structural drafting, and sampling and testing procedures. Courses related to these subjects in mathematics and the physical sciences are taken. Also included are courses dealing with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Graduates of this program accept technician positions in the offices of city engineers and professional engineers; as technicians working with topographers, topographic and structural draftsmen, and steel and concrete laboratory technicians; and as chainmen, recorders, or instrumentmen in technician activities with land surveys, property surveys, highway layouts, traverse and level parties, private construction companies, and consulting engineering firms. With additional experience students may aspire to positions as inspectors, supervisors, or chiefs of parties in a variety of construction work connected with civil technology.

FRESHMAN YEAR

First Semester

Course	No.		Credit
CT	104	Construction Materials	2
DM	108	Technical Drawing	3
GN	100	Technical Institute Orientation Lectures	1
ENGL	101	English Composition I	3
MA	111	Algebra	3
PS	120	Introduction to Chemistry	3
PS	136	Physics: Mechanics and Heat	4
			19

Second Semester

Course	No.		Credit
BC	276	Specification and Contract Documents	2
CT	152	Fundamentals of Surveying	2
CT	172	Highway Structural Drafting	2
GN	152	Fundamentals of Technical Writing	2
GN	232	Democratic Government	2
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
CE	113	Slide Rules and Graphs	1
			18

SOPHOMORE YEAR

Third Semester

CT	204	Land Surveying	2
CT	208	Route Surveying	2
CT	216	Graphic Statics	1
DM	212	Mechanics of Materials	4
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			20

Fourth Semester

CT	232	Costs and Estimates	2
CT	252	Hydraulics	2
CT	256	Inspection and Testing Procedures	2
CT	260	Highways	2
CT	264	Steel and Concrete Construction	3
CT	272	Photogrammetry	1
CT	276	Bituminous Materials	1
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
			17

CURRICULUM IN DRAFTING AND MECHANICAL TECHNOLOGY

Offered: Tool Option, Barker Memorial Center (first year), Fort Wayne Center, and Indianapolis Center; Mechanical Option, Calumet Center only.

This program of study has been designed to prepare students to take employment in industries requiring services of drafting and design of a mechanical nature.

Emphasis is placed on product and tool design, mechanical maintenance, testing, inspection, and the selection of methods for efficient and economical production.

Drafting and mechanical technology students work in a drawing room

Also included are courses dealing with fundamentals of industrial management and with some of the historical, economic, and human relations aspects of our American industrial life, all related to the individual.

Graduates of this program accept jobs as laboratory technicians, engineering assistants, detailers, draftsmen, tool maintenance men, plant maintenance men, layout men, inspectors, and machine and tool salesmen. With additional experience students may aspire to positions as industrial supervisors, machine and tool designers, tool buyers, production expeditors, and cost estimators.

The tool option is accredited by the Engineers' Council for Professional Development.

OPTION A: TOOL OPTION

FRESHMAN YEAR

First Semester

Course	No.		Credit
DM	108	Technical Drawing	3
GN	100	Technical Institute Orientation Lectures	1
PSY	120	Psychology	3
MA	111	Algebra	3
PS	120	Introduction to Chemistry	3
PS	136	Physics: Mechanics and Heat	4
ENGL	101	English Composition I	3
			20

Second Semester

Course	No.		Credit
DM	156	Graphical Computations	3
DM	180	Materials and Processes	3
DM	204	Machine and Tool Drawing	3
GN	52	Physical Education	0
GN	152	Fundamentals of Technical Writing	2
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
CE	113	Slide Rules and Graphs	1
			19

SOPHOMORE YEAR

3rd ~~Fourth~~ Semester

DM	212	Mechanics of Materials	4
DM	228	Machine Design I	3
DM	236	Jigs, Fixtures, and Gages	4
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			19

4th ~~Third~~ Semester

DM	256	Machineability	3
DM	264	Machine Design II	3
DM	288	Die Design	4
GN	64	Physical Education	0
GN	232	Democratic Government	2
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
IT	227	Production Planning and Control	3
			19

OPTION B: MECHANICAL OPTION

FRESHMAN YEAR

First Semester

Course	No.		Credit
DM	108	Technical Drawing	3
GN	100	Technical Institute Orientation Lectures	1
ENGL	101	English Composition I	3
PSY	120	Psychology	3
MA	111	Algebra	3
PS	120	Introduction to Chemistry	3
PS	136	Physics: Mechanics and Heat	4
			20

Second Semester

Course	No.		Credit
DM	156	Graphical Computations	3
DM	180	Materials and Processes	3
DM	224	Mechanics: Statics and Dynamics	4
GN	52	Physical Education	0
GN	152	Fundamentals of Technical Writing	2
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
CE	113	Slide Rules and Graphs	1
			20

SOPHOMORE YEAR

Third Semester

DM	252	Strength of Materials	4
DM	200	Advanced Materials and Processes	3
DM	216	Machine Elements	3
DM	220	Elementary Machine Design	2
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			20

Fourth Semester

DM	294	Mechanical Analysis	4
DM	292	Applied Machine Design	2
PS	284	Instrumentation	3
GN	64	Physical Education	0
GN	232	Democratic Government	2
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
IT	227	Production Planning and Control	3
			18

CURRICULUM IN ELECTRICAL TECHNOLOGY

Offered: Option A, Calumet Center only; Option B, Calumet Center and Indianapolis Center; Option C, Calumet Center, Fort Wayne Center, and Indianapolis Center.

The electrical technology programs are designed to prepare students for technological employment with electrical communication industries; light and power industries; manufacturers of electrical equipment; and electrical suppliers and distributors; or with an industry where electrical power and controls are utilized.

General emphasis in all three options is placed upon understanding the fundamental principles of electricity and their present-day applications, with special consideration given to modern developments in communications, automation, and industrial practices.

Also included are courses dealing with the fundamentals of industrial management and with some of the historical, economic, and human relations aspects of our American industrial life—all related to the individual.

Option A, Industrial Electricity, stresses the application of direct and alternating current theory to electrical machinery and instruments—including power generation, transmission, measurement, and control. Emphasis is placed upon courses in circuit theory, machinery, electrical measurements, and electronic and magnetic controls in automation systems. Students are prepared to accept positions as electrical engineering assistants, maintenance men, trouble shooters, repair men, laboratory technicians, etc.

Option B, Radio and Television, stresses basic electronics (including modern transistors) as applied to radio and television transmission and reception. Special emphasis is placed on trouble shooting, maintenance, and repair of radio and television—including colored TV. Students are prepared to accept positions with radio and TV manufacturers and broadcasting companies. Many go into sales, service, or contracting business for themselves.

Option C, Industrial Electronics. Increased industrial usage of electronic devices for testing, measurement, and control—especially in automation systems—has created a growing demand for highly skilled electronics technicians. Electronic fundamentals, components, and circuits, as well as transistors applied in these areas, are stressed. Special emphasis is given to instruments, instrumentation, and experimental and testing procedures, including the electronic components and circuitry of systems applied to automation. Students are prepared to accept positions as electronic technicians in installation, trouble shooting, maintenance, sales and related activities.

Within their own specialized areas, students from any option may accept positions as electrical draftsmen, estimators, inspectors, salesmen, checkers, analysts, testers, technical writers, etc.

After experience and continued growth in their fields, graduates are now holding such positions as supervisors, managers, sales engineers, customer engineers, contractors, field engineers, and application engineers.

This program is accredited by the Engineers' Council for Professional Development.

FRESHMAN YEAR

First Semester

Course	No.		Credit
ET	104	Electronics I—Circuits	4
GN	100	Technical Institute Orientation Lectures	1
ENGL	101	English Composition I	3
MA	111	Algebra	3
PS	120	Introduction to Chemistry	3
PS	176	Physics: Electricity, Sound, and Light	4
			18

Second Semester

Course	No.		Credit
ET	156	Electronics II—Semiconductors; Transistors	3
ET	176	Electrical Circuits	4
GN	52	Physical Education	0
GN	152	Fundamentals of Technical Writing	2
GN	232	Democratic Government	2
PS	136	Physics: Mechanics and Heat	4
MA	112	Trigonometry	3
CE	113	Slide Rules and Graphs	1
			19

OPTION A: INDUSTRIAL ELECTRICITY

SOPHOMORE YEAR

Third Semester

DM	108	Technical Drawing	3
ET	212	Electrical Machines	5
ET	228	Power Distribution	2
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			21

Fourth Semester

ET	252	Electrical Power Blueprints and Diagrams	2
ET	264	Electrical Measurements	4
ET	268	Control of Electric Motors	4
ET	273	Automation and Electronic Controls	5
GN	64	Physical Education	0
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
			19

OPTION B: RADIO AND TELEVISION

Third Semester

DM	108	Technical Drawing	3
ET	224	Fundamentals of Television	2
ET	236	Electronics III—Radio Circuits	5
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			21

Fourth Semester

ET	264	Electrical Measurements	4
ET	276	Electronic Trouble Shooting	2
ET	292	Television Circuits	4
ET	297	Color Television	4
GN	64	Physical Education	0
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
			18

OPTION C: INDUSTRIAL ELECTRONICS

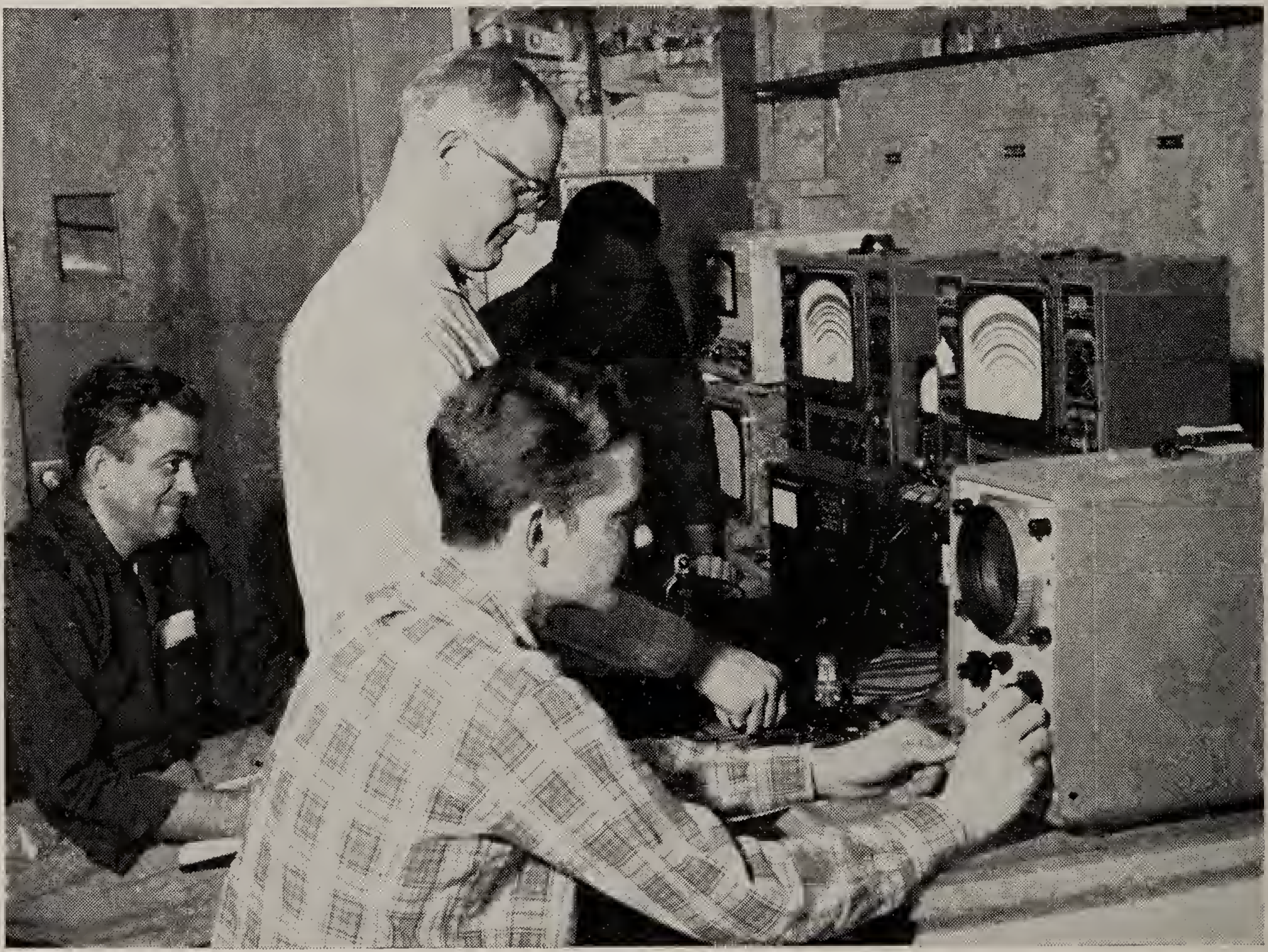
Third Semester

DM	108	Technical Drawing	3
ET	208	AC & DC Machines and Controls	2
ET	236	Electronics III—Radio Circuits	5
PSY	120	Psychology	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	104	Industrial Organization and Production	4
			21

Fourth Semester

ET	257	Electronics IV—Transmitters	3
ET	264	Electrical Measurements	4
ET	273	Automation and Electronic Controls	5
ET	276	Electronic Trouble Shooting	2
GN	64	Physical Education	0
GN	260	Economics of Industry	2
IT	152	Human Relations in Industry	2
			18

Electrical technology students learn laboratory techniques



CURRICULUM IN INDUSTRIAL TECHNOLOGY

Offered: Calumet Center, Barker Memorial Center (first year), Fort Wayne Center, and Indianapolis Center.

This major field of specialization is designed to prepare students primarily for technological services in the industrial engineering areas of production planning and control, plant layout, quality control, job evaluation, and cost analysis. It also covers the essentials of management with which foremen, supervisors, and administrative personnel in general are concerned.

Typical jobs are time-study man, methods planner, production control clerk, stock supervisor, cost analyst, job analyst, and personnel interviewer.

Emphasis is placed upon courses in motion and time study, job evaluation, wage incentives, production and operation planning, plant layout, and industrial safety, and on courses in mathematics, physics, and chemistry.

Also included are courses dealing with some of the historical, economic and human relations aspects of our American industrial life, all related to the individual. This program is accredited by the Engineers' Council for Professional Development.

FRESHMAN YEAR

First Semester

Course	No.		Credit
GN	100	Technical Institute Orientation Lectures	1
ENGL	101	English Composition I	3
PSY	120	Psychology	3
IT	104	Industrial Organization and Production	4
MA	111	Algebra	3
PS	136	Physics: Mechanics and Heat	4
			18

Second Semester

Course	No.		Credit
DM	180	Materials and Processes	3
GN	52	Physical Education	0
GN	152	Fundamentals of Technical Writing	2
IT	152	Human Relations in Industry	2
IT	260	Motion and Time Study	3
MA	112	Trigonometry	3
PS	176	Physics: Electricity, Sound, and Light	4
CE	113	Slide Rules and Graphs	1
			18

SOPHOMORE YEAR

First Semester

Course	No.		Credit
DM	108	Technical Drawing	3
GN	204	Fundamentals of Practical Speaking	2
GN	220	Technical Report Writing	2
IT	224	Production Planning and Control	4
IT	244	Fundamentals of Production Cost	2
IT	272	Job Evaluation	2
PS	120	Introduction to Chemistry	3
			18

Second Semester

Course	No.		Credit
GN	64	Physical Education	0
GN	232	Democratic Government	2
GN	260	Economics of Industry	2
GN	264	Conference Speaking	2
IT	212	Industrial Safety	2
IT	218	Production Cost Analysis	2
IT	268	Plant Layout	3
IT	280	Wage Incentives	2
IT	296	Industrial Technology Case Problems	2
PS	204	Fundamentals of Quality Control	2
			19

CURRICULUM IN PROFESSIONAL PILOT TECHNOLOGY

Offered: Lafayette campus only.

The professional pilot curriculum is designed to prepare a small, carefully selected group of young men for careers as professional pilots. Students gain a working knowledge of airline operations and airline-type equipment. This intensive two-year program combines regular classroom courses with advanced flight instruction to give the students training and experience to qualify as co-pilots with scheduled air carriers or as executive pilots with private multi-engine equipment operators. The program is available only on the Lafayette campus.

To be eligible for admission, applicants must be high school graduates. They must hold an FAA commercial pilot's license. Students beyond the ages usually employed by the airlines should not apply unless they plan to seek executive pilot employment where age is more desirable. It is also desirable to have military obligations fulfilled or have reasonable assurance of deferment for the required two years.

Fees of $250 are charged for each of the five semesters. This covers registration, medical, convocations, and student activity fees.

During the 12-month period following the completion of the first year and after DC-3 certification the students will receive $100 a month stipend. Each student will log a minimum of 250 hours of DC-3 co-pilot flight time.

Professional pilot students receive airline type link instruction

FRESHMAN YEAR

First Semester
(Begins in February)

Course No.			Credit
ENGL	101	English Composition I	3
MA	111	Algebra	3
AT	120	Aerology I	3
AT	121	Aircraft Engines	3
AT	122	Airways Procedures I	3
AT	123	Airlines Operations	3
AT	124	Navigation I	2
			20

Second Semester
(Begins in September)

Course No.			Credit
MA	112	Trigonometry	3
SPE	114	Principles of Speech	3
PHYS	205A	Outlines of Physics	4
AT	125	Aerology II	2
AT	126	Flight Dispatching	3
AT	127	Navigation II	2
AT	128	DC-3 Airplane	3
AT	129	Airways Procedures II	4
			24

SOPHOMORE YEAR

Third Semester
(Begins in February)

AT	221	DC-3 Orientation	6
AT	222	Airway Procedures III	2
AT	223	Flight Safety	3
AT	224	Flight Schedules I	5
			16

Fourth Semester
(Begins in June)

AT	225	Airways Procedures IV	2
AT	226	Crew Coordination I	2
AT	227	Advanced Navigation	4
AT	228	Flight Schedules II	8
			16

Fifth Semester
(Begins in September)

AT	321	Airways Procedures V	2
AT	322	Crew Coordination II	2
AT	323	Aerodynamics for Airmen	5
AT	324	Flight Schedules III	8
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CERTIFICATE PROGRAMS IN APPLIED TECHNOLOGY

The certificate programs are designed primarily for the more mature part-time student through consultation with leaders from business and industry. Each program is actively reviewed in the light of the latest trends in manufacturing and plant and business operations.

These are intensive and practical programs of less than forty semester hours of credit. Advancement in each of these programs can be varied to suit the needs of the individual student who may take one, two, or three courses each semester. The average part-time student can complete any one of the programs within three years.

Enrollment is on the basis of a program carefully tailored to meet individual student needs and vocational objectives through consultation with an experienced counselor. Changes in the student's program arising out of new work assignments or changes in vocational objective may be worked out with his counselor.

In those engineering technology areas which have a counterpart in the two-year curricula, a student may work toward the certificate and then toward the Diploma in Applied Technology, provided he has been admitted as a regular student.

ARCHITECTURAL DRAFTING CERTIFICATE PROGRAM (ADT)

This is the counterpart of the Building Construction Technology Diploma program. It is an intensive and practical program of 37 semester hours credit designed to prepare part-time students for technological employment with architects or to aid beginning employees in quickly developing greater competence in this field.

In the earlier courses, emphasis is placed on the fundamentals of architectural drafting as commonly utilized in architecture. After competence in the fundamental techniques is established, the emphasis shifts to fundamental knowledge of materials and practices in modern architecture and to general knowledge required of architects' assistants.

Course No.			Credits
BC	104	Plan Reading	1
MA	111	Algebra	3
BC	116	Architectural Drawing	2
BC	164	Building Materials	3
MA	112	Trigonometry	3
PS	136	Physics: Mechanics and Heat	4
BC	156	Frame Construction	3
BC	276	Specifications and Contract Documents	2
BC	236	Architectural Projections	2
BC	220	Concrete and Masonry Construction	3
DM	212	Mechanics of Materials	4
BC	172	Systems of Construction	2
BC	256	Structural Drawing	3
BC	204	Building Regulations	2
			37

DRAFTING AND DESIGN CERTIFICATE PROGRAM (DDT)

This is the counterpart of the Drafting and Mechanical Technology Diploma program and is an intensive and practical program of 35 semester hours. It is designed to train part-time students in the fundamentals of industrial drafting and to work progressively into the principles of mechanical design.

It prepares and assists technical employees to work in drafting techniques associated with general product design or as mechanical engineering assistants.

Course No.			Credits
DM	108	Technical Drawing	3
MA	111	Algebra	3
DM	156	Graphical Computations	3
MA	112	Trigonometry	3
DM	180	Materials and Processes	3
PS	136	Mechanics and Heat	4
DM	204	Machine and Tool Drawing	3
DM	212	Mechanics of Materials	4
DM	228	Machine Design I	3
DM	264	Machine Design II	3
DM	256	Machineability	3
			35

ELECTRICAL POWER CERTIFICATE PROGRAM (EPT)

This is the counterpart of the Electrical Technology Diploma program and is an intensive and practical program of 35 semester hours.

It is designed to assist part-time students in the engineering technician area in the field of power generation, transmission, and utilization. Such employees will generally be assistants to electrical engineers.

The program begins with the fundamental mathematics, science, and electricity required to develop a background of understanding for the applications and practices studied later in the program.

Course No.			Credit
ET	104	Electronics I—Tube Circuits	4
MA	111	Algebra	3
PS	176	Physics: Electricity and Wave Motion	4
ET	212	Electrical Machines	5
MA	112	Trigonometry	3
ET	176	Electrical Circuits	4
ET	228	Power Distribution	2
ET	268	Control of Electric Motors	4
ET	252	Electric Power Blue Prints	2
ET	264	Electrical Measurements	4
			35

INDUSTRIAL ELECTRONICS AND INSTRUMENTATION CERTIFICATE PROGRAM (IET)

This is the counterpart of the Electrical Technology Diploma program and is an intensive and practical program of 36 semester hours. It is designed to assist part-time students working in the field of electronics to prepare for positions with automation systems in testing, maintenance, installation, and operations. Such employees may work as assistants to electronic engineers.

The program begins with fundamental science, and electrical concepts required to develop competence based upon understanding in the applications and practices studied later in the program.

Course No.			Credit
ET	104	Electronics I—Tubes	4
MA	111	Algebra	3
PS	176	Physics: Electricity and Wave Motion	4
ET	156	Electronics II—Transistors	3
MA	112	Trigonometry	3
ET	176	Electrical Circuits	4
ET	236	Electronics III—Radio	5
PS	284	Instrumentation	3
ET	208	Machine Controls	2
ET	272	Automation	5
			36

INDUSTRIAL AND LABOR RELATIONS CERTIFICATE PROGRAM (ILRT)

Training in industrial and labor relations is essential for those engaged in the field of employment relationship. Sound employee-employer relations prevail only where representatives of both sides, labor and management, are adequately trained and experienced. The two-year day and evening course of study provides labor relations assistants and union officers with professional education needed to handle the basic problems that arise in industry and labor. The program consist of 24 credits.

Required Courses			Credits
GN	240	Labor Relations Problems	3
GN	268	Elements of Law	3
IT	104	Industrial Organization and Production	4
Recommended Courses			
*GN	104	English Grammar and Composition	2
*GN	120	Psychology	2
*GN	204	Fundamentals of Practical Speaking	2
GN	260	Economics of Industry	2
GN	264	Conference Speaking	2
IT	152	Human Relations in Industry	2
IT	368	Legislation Affecting Industrial Relations	4

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*Students may substitute these courses:

ENGL	101	English Composition	(3)
PSY	120	Psychology	(3)
SP	114	Speech	(3)

Optional Courses

GN	224	Parliamentary Procedure	2
GN	152	Technical Writing	2
IT	260	Motion and Time Study	3
IT	272	Job Evaluation	2
IT	280	Wage Incentives	2

PROFESSIONAL FOREMANSHIP CERTIFICATE PROGRAM (PF)

The Professional Foremanship certificate program is an intensive and practical curriculum equivalent to 36 semester hours. It is intended to provide foremen with the professional education needed to handle the many supervisory and technical problems which they meet daily in technical, communications, and human relations fields.

The program has been set up by representatives of industry, professional foremen's organizations, and the university. It is designed to meet the needs of management, which is vitally concerned with training foremen for positions of leadership.

The Professional Foremanship Program is the certificate program counterpart of the Industrial Technology two-year curriculum. Enrollment is on the basis of a program worked out with the counselor assigned and carefully tailored to individual needs.

Students admitted in the temporary classification may qualify for the certificate in Professional Foremanship by taking approved undergraduate level, lower division technology courses for which their admission classification establishes eligibility and for which they have necessary prerequisites. Appropriate credits earned in this program while in the temporary student classification may be used for credit toward a diploma under rules governing reclassification as a regular student.

Required Courses—10 semester hours minimum

Course No.			Credits	Credits
IT	104	Industrial Organization and Production	4	4
PSY	120	Psychology OR	3	—
GN	120	Psychology	—	2
IT	152	Human Relations in Industry	2	2
SP	114	Principles of Speech OR	3	—
GN	204	Fundamentals of Practical Speaking	—	2
			—	—
			12	10

Optional Courses—14 semester hours maximum chosen from one or a combination of the following groups:

Group I—14 semester hours maximum
  Communications—10 semester hours maximum
  English and Report Writing—7 hours maximum
  Advanced courses in speech—3 hours maximum
  Economics and Labor Relations—6 hours maximum
  Physical Sciences—12 hours maximum

Group II—8 semester hours maximum

Courses specific to two-year diploma curricula—8 semester hours maximum

Courses from one or more technologies may be elected in this group provided that (1) they relate directly to the individual's duties, responsibilities, or line of promotibility; and (2), prior approval of the counselor and the head of the Department of Engineering Technology is secured.

MANAGEMENT EXPERIENCE—(Equivalent to 12 semester hours)

Before receiving the Professional Foremanship Certificate, the candidate must have had two years of successful experience in the management field. Satisfaction of this requirement is met by a confirming letter from the managerial employer under whom the candidate worked. Formal credit is not established for this work, but it is considered equivalent to 12 semester hours of credit in the Professional Foremanship Program.

RADIO AND TV CERTIFICATE PROGRAM (R&TV)

This is an intensive and practical program of 35 semester hours and is intended for maintenance, operational, and production technical personnel in the fields of electronics communication, primarily radio and television.

1960 applied technology graduates assemble for graduation exercises,

Course No.			Credits
ET	104	Electronics I—Tube Circuits	3
MA	111	Algebra	3
PS	176	Physics: Electricity and Wave Motion	4
ET	156	Electronics II—Transistor Circuits	3
MA	112	Trigonometry	3
ET	176	Electrical Circuits	4
ET	236	Radio Circuits	5
ET	256	Transmitters	3
ET	224	Television Fundamentals	2
ET	292	Television Advanced	3
ET	276	Trouble Shooting	2
			35

h are in the Edward C. Elliott Hall of Music on the Lafayette campus.

TOOL AND MACHINE DESIGN CERTIFICATE PROGRAM (TDT)

This is the counterpart of the Drafting and Mechanical Technology Diploma program. It is an intensive and practical program of 37 semester hours designed to train part-time students—in the fundamentals of industrial drafting and to advance them progressively into the principles of design as applied to industrial production tools and machines.

Course No.			Credits
DM	108	Technical Drawing	3
MA	111	Algebra	3
DM	156	Graphical Computations	3
MA	112	Trigonometry	3
DM	204	Machine and Tool Drawing	3
PS	136	Physics: Mechanics and Heat	4
DM	212	Mechanics of Materials	4
DM	236	Jigs, Fixtures and Gages	4
DM	288	Die Design	4
DM	228	Machine Design I	3
DM	264	Machine Design II	3
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SPECIALIZED SERVICE PROGRAMS

The Division of Applied Technology cooperates with individual industries or communities in the development and operation of specialized training programs. Such service is rendered without charge other than the regular fees assessed for student enrollment in classes.

Since such specialized service programs are usually restricted to a single location and serve a special need, they are not described in this general catalog and may differ to some extent in entrance requirements, fees, advanced standing provision, and other details from the general fields of study described in this catalog. Included in these specialized programs are industrial programs in co-operation with local industry primarily designed for up-grading technician employees.

Attention is directed to those courses with numbers below 100 on the following pages.

Inquiries should be directed to the director of the nearest University Center or to the dean of university extension, Purdue University, Lafayette, Indiana.

PRACTICAL NURSING CERTIFICATE PROGRAM

Offered: Calumet Center only.

The National Association for Practical Nursing Education defines a practical nurse as a person trained to care for selected subacute convalescent and chronic patients, and to assist the professional nurse in a team relationship, especially in the care of those more acutely ill. She provides nursing service in private homes and in institutions. She may be employed by the lay public, hospitals, or health agencies. A practical nurse works only under the direct orders of a licensed physician or the supervision of a registered professional nurse.

The program emphasizes the acquisition of skills in caring for the patient and assisting with the home and hospital duties associated with illness and convalescence. To the extent possible the skills and techniques are soundly grounded in understanding of the basic principles involved.

The course consists of 16 weeks of classroom and laboratory instruction at the Calumet Center followed by four 8-week periods at each of the four cooperating hospitals. All instruction is under the supervision of Purdue University working in cooperation with a Community Advisory Council. The program is accredited by the Indiana State Board of Nurses Registration and Nursing Education and by the National Association of Practical Nurse Education.

First Semester

Course No.	Course Title	Class	Lab.	Fee
PN 8	Vocational Ethics and Personal Hygiene	6	0	$38
PN 16	Family Living	5	4	$74
PN 24	Nursing Care	5	11	$63

Second and Third Semesters

Course No.	Course Title	Class	Lab.	Fee
PN 44	Medical Clinical Experience, 8 weeks	4	36	$10
PN 56	Surgical Clinical Experience, 8 weeks	4	36	$10
PN 64	Maternity Clinical Experience, 8 weeks	4	36	$10
PN 72	Pediatrics and Long-term Illness Clinical Experience, 8 weeks	4	36	$10

Practical nursing students practice techniques of patient care

Calendar
July 1, 1961 to June 30, 1962

Class 18

1st semester—April 25, 1960, to August 14, 1960
Vacation—August 15, 1960, to September 11, 1960
2nd semester—September 13, 1960, to January 1, 1961
3rd semester—January 2, 1961, to April 23, 1961
Graduation—May 1961

Class 19

1st semester—September 12, 1960, to December 30, 1960
2nd semester—January 2, 1961, to April 23, 1961
3rd semester—April 24, 1961, to August 13, 1961
Vacation—August 14, 1961, to September 11, 1961
Finishing date—September 11, 1961
Graduation—September 1961

Class 20

1st semester—January 2, 1961, to April 23, 1961
2nd semester—April 24, 1961, to August 13, 1961
3rd semester—August 14, 1961, to December 3, 1961
Vacation—December 4, 1961, to January 1, 1962
Finishing date—January 1, 1962
Graduation—January 1962

Class 21

1st semester—April 24, 1961, to August 13, 1961
2nd semester—August 14, 1961, to December 3, 1961
3rd semester—December 4, 1961, to March 25, 1962
Vacation—March 26, 1962, to April 23, 1962
Finishing date—April 23, 1962
Graduation—May 1962

Class 22

1st semester—September 11, 1961, to December 31, 1961
Vacation—January 1, 1962, to January 28, 1962
2nd semester—January 29, 1962, to May 20, 1962
3rd semester—May 21, 1962, to September 10, 1962
Finishing date—September 10, 1962
Graduation—September 1962

Class 23

1st semester—January 1, 1962, to April 22, 1962
Vacation—April 23, 1962, to May 21, 1962
2nd semester—May 21, 1962, to September 9, 1962
3rd semester—September 10, 1962, to December 31, 1962
Finishing date—December 31, 1962
Graduation—January 1963

Class 24

1st semester—April 23, 1962, to August 12, 1962
Vacation—August 13, 1962, to September 10, 1962
2nd semester—September 10, 1962, to December 30, 1962
3rd semester—December 31, 1962, to April 22, 1963
Finishing date—April 22, 1963
Graduation—May 1963

DESCRIPTION OF COURSES

Courses listed on the following pages will, for the most part, be offered during the academic year 1961-62. For each course the description should be interpreted as follows: First, the official number of the course; second, its special title; and third, the number of class, laboratory, and credit hours. For example, the following:

BC 288 ELEMENTARY SURVEYING.
Class 1, Lab. 3, cr. 2

indicates that BC 288 is Elementary Surveying, meets one hour in class and three hours in laboratory per week, and gives two semester hours credit.

Courses numbered from:

0-99	special service courses primarily for adults working for a certificate or toward job improvement.
100-199	primarily for freshmen working toward a diploma in Applied Technology.
200-299	primarily for sophomores working toward a diploma in Applied Technology.
300-399	primarily for students with diplomas doing additional work to meet job requirements.

DEPARTMENT OF AVIATION TECHNOLOGY

Professor Maris in Charge

Assistant Professor: Maris.
Instructors: Blatchley, Duncan, Frost, Haubl, Holleman, Kemp, McCormick, Toth, Treager, Wheelock.

UNDERGRADUATE LEVEL

Lower-Division Courses

AT 111. AIRCRAFT WELDING AND MATERIALS. Class 1, Lab. 3, cr. 2.
Welding practices applied to aircraft materials; alloys of steel, aluminum, magnesium, and nickel.

AT 112. AIRCRAFT ENGINES I. Class 3, Lab. 6, cr. 5.
Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems and superchargers, engine installation and run-up, disassembly and inspection of various types of aircraft engines.

AT 113. FEDERAL AIR REGULATIONS AND FORMS. Class 2, Lab. 0, cr. 2.
Familiarization with federal air regulations governing safe practices in maintenance and inspection of airframes and power plants will be given. Repeated practice in the completion of the forms required to report on maintenance and inspection practices will be accomplished.

AT 114. AIRCRAFT ENGINE ACCESSORIES. Class 3, Lab. 6, cr. 5.
Fundamental principles of aircraft engine accessories, including theoretical and practical work on float and pressure injection carburetors, fuel injection systems, magnetos and ignition systems, generators and generator control systems.

AT 115. AIRCRAFT FABRICATION. Class 3, Lab. 6, cr. 5.
Aircraft fabrication practices, application and use of hand and machine sheet metal tools, preparation, forming, fastening, and assembly of various airframe materials.

AT 116. AIRFRAME MAINTENANCE I. Class 3, Lab. 6, cr. 5.
Principles and methods of light aircraft inspection, maintenance and repair of airframes, including fabric and finishing methods, and assembly and rigging. Laboratory work includes rebuilding and return to service of a typical light aircraft.

AT 120. AEROLOGY. Class 3, cr. 3.
The purpose of this course is to introduce the material, information, and methods used by the airlines to determine the effects of weather on airline operation.

Training stresses the practical application of aircraft maintenance

AT 121. AIRCRAFT ENGINES. Class 3, cr. 3.

Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems and superchargers. General engine operating procedures, cruise control and performance diagnosis.

AT 122. AIRWAYS PROCEDURES I. Class 2, Lab. 3, cr. 3.

This instruction will supplement the pilot's instrument flight experience with study and practice of the proper procedures for conducting instrument flight according to civil air regulations, including the proper execution of departure, enroute, and letting down through to landing procedures, according to existing instructions and regulations. Practice in the proper voice procedures used in airways flying is provided as well as study in the use of the Jeppesen Airway Manuals I, II, and III. The laboratory work will be given in the Link Trainer.

AT 123. AIRLINES OPERATIONS. Class 2, Lab. 3, cr. 3.

This course will present the historical background of commercial airlines, emphasizing the influence of the local community, the Federal Aeronautics Board, and the Federal Aviation Agency on their operation.

AT 124. NAVIGATION I. Class 2, cr. 2.

A study of navigation emphasizing the use of a computer. Computer skill will be developed in problems involving rate, time, distance, fuel consumption, wind vector, and radius of action problems.

AT 125. AEROLOGY II. Class 2, cr. 2. Continuation of AT 120.

AT 126. FLIGHT DISPATCHING. Class 2, Lab. 3, cr. 3.

Introduces the pilot to the factors that contribute to the actual dispatching and release of a flight. Special emphasis will be placed on the preparation of flight plans, flight logs, and aircraft loading. The Federal aeronautics manuals outlining proper dispatching procedures will be stressed.

AT 127. NAVIGATION II. Class 1, Lab. 3, cr. 2.

Continuation of and must be preceded by AT 124.

AT 128. DC-3 AIRPLANE. Class 3, cr. 3.

Acquaints the pilot with design, construction, and characteristics of DC-3 and its accessories.

Continuation of and must be preceded by AT 121.

AT 129. AIRWAYS PROCEDURES II. Class 3, Lab. 3, cr. 4.

Continuation of and must be preceded by AT 122.

AT 131. AIRCRAFT ELECTRICITY. Class 3, cr. 3.

A study of the relationships of current, magnetism, and voltage in simple closed circuits, stressing DC circuitry and its applications in aviation systems.

AT 132. ELECTRONICS I. Class 3, cr. 3.

Covers applications of Kirchoff's Laws to closed networks, discusses diodes, amplification of current, and gives a brief introduction to reactances.

AT 133. AIRCRAFT AC ELECTRICITY. Class 3, cr. 3. Must be preceded by AT 131.

Studies circuits with an applied alternating emf., phase relationships, reactances, and impedances. Considers modern aviation electrical systems utilizing 400 cps alternating voltage.

AT 134. ELECTRONICS II. Class 3, cr. 3. Must be preceded by AT 132.

Discusses impedance and resonance in RF circuits; covers circuit coupling, filter networks, and RF amplification. Contains a brief introduction to UHF circuits.

AT 135. AVIONICS LABORATORY I. Lab. 6, cr. 2. To be taken concurrently with AT 131 and AT 132.

Demonstrates applications of Kirchoff's Laws in DC circuits, involves construction of power supplies and studies power loss in circuits; shows relationships of magnetic flux and electric current.

AT 136. AVIONICS LABORATORY II. Lab. 6, cr. 2. To be taken concurrently with AT 133 and AT 134.

Demonstrates reactance and impedance in RF circuits; involves the construction of oscillators; coupled circuits, cascaded amplifiers, and triode operated devices.

AT 211. TRANSPORT AIRCRAFT MAINTENANCE I. Lab. 15, cr. 5.

Maintenance and repair of airworthy power plants, power plant accessories, and airframes on heavy, transport category aircraft in an FAA-approved repair station.

AT 212. AIRCRAFT ENGINES II. Class 5, Lab. 0, cr. 5. Must be preceded by AT 112 and AT 114.

Coordinated with AT 211 this includes additional instruction on power plants plus discussion and instruction on problems encountered in the laboratory.

AT 213. AIRCRAFT SYSTEMS. Class 2, Lab. 3, cr. 3.

Inspection, maintenance, and theory of operation of aircraft hydraulic, electrical, fuel and oil, pressurization, anti-icing, and instrument systems.

AT 214. JET ENGINE AND ACCESSORIES. Class 3, Lab. 6, cr. 5.

Fundamental principles of jet engines, including the study of compressors, combustion chambers, turbines, fuel controls, fuel systems, lubrication, ignition systems. Disassembly, inspection, and run up of various gas turbine engines. Familiarization with turboprops, rockets, pulse jets, and ram jets will also be given.

AT 215. AIRCRAFT ELECTRICITY. Class 3, Lab. 6, cr. 5.

A study of aircraft electrical systems as they are inter-related with other aircraft systems, power plants, circuits, instrumentation, apparatus, and controls, including their inspection, operation, and maintenance.

AT 216. AIRCRAFT PROPELLERS AND COMPONENTS. Class 2, Lab. 3, cr. 3.

A comprehensive course on propeller theory, function, and operation. A wide range of types and sizes of propellers will be covered for consideration on operations, inspection, maintenance, and overhaul procedures and practices.

AT 217. AIRFRAME MAINTENANCE II. Class 5, Lab. 0, cr. 5. Must be preceded by AT 115 and AT 116.

Coordinated with AT 215 it includes additional instruction on airframes and aircraft systems plus discussion and instruction on problems encountered in the laboratory.

AT 221. DC-3 ORIENTATION. Class 2, Lab. 12, cr. 6.

This course is the flight phase of the DC-3 qualification. Standardization and coordination of the procedures associated with cockpit functions will be stressed. Each student will be given a DC-3 checkout by the PAC chief pilot. He will be certified as a copilot on the DC-3 aircraft flown by Purdue Aeronautics Corporation.

AT 222. AIRWAYS PROCEDURES III. Class 2, cr. 2. Continuation of and must be preceded by AT 129.

AT 223. FLIGHT SAFETY. Class 2, Lab. 3, cr. 3.

An indoctrination in the Purdue Aeronautics Corporation safety regulations, with regard to ground and air operations. A comprehensive study of air accidents will be made to enable the student to understand better the causes of such accidents, and how to prevent them.

AT 224. FLIGHT SCHEDULES I. Lab. 15, cr. 5.

Live flight laboratory to give the pilot the opportunity to obtain flight experience in the DC-3 under actual flight conditions. Includes instruction in the handling of passengers, fuel management, inspection, and the various phases of flight operation away from the home base.

AT 225. AIRWAYS PROCEDURES IV. Class 2, cr. 2. Continuation of and must be preceded by AT 222.

AT 226. CREW COORDINATION I. Class 1, Lab. 3, cr. 2.

This course trains the student in the proper techniques of crew coordination. Emphasis is placed on the problem of functioning in limited cockpit space. Crew discipline is developed with respect to the captain's responsibility for making decisions and the crew's responsibility for carrying them out. The psychology of human relations under these conditions is studied to better understand the problem.

AT 227. ADVANCED NAVIGATION. Class 1, Lab. 9, cr. 4.

To develop an understanding of the science of navigation by electronic, celestial, and pressure pattern methods.

AT 228. FLIGHT SCHEDULES II. Lab. 24, cr. 8. Continuation of and must be preceded by AT 224.

AT 231. AIRCRAFT COMMUNICATION AND NAVIGATION SYSTEMS. Class 3, cr. 3. Must be preceded by AT 133.

Studies RF circuits and power supplies; includes a description of common multigrid tubes and characteristics and applications in basic transmitters and receivers used in aircraft.

AT 232. ELECTRONICS III. Class 3, cr. 3. Must be preceded by AT 134.

Includes a study of the electromagnetic spectrum, speech modulation of carrier waves, frequency and phase modulation. Discusses FM and VHF transmitters, receivers and antenna systems.

AT 233. MICROWAVE AVIATION APPLICATIONS. Class 3, cr. 3. Prerequisite AT 231 and AT 232.

Covers radar beacons, radio range beacons, direction and range finding equipment, aircraft servomechanisms and video systems.

AT 234. ELECTRONICS IV. Class 3, cr. 3. Must be preceded by AT 231 and AT 232.

Studies resonant cavities, waveguides, radar transmitters and receivers; considers free space equations, wave front propagation and cathode ray deflection.

AT 235. AVIONICS LABORATORY III. Lab. 6, cr. 2. To be taken concurrently with AT 231 and AT 232.

Demonstrates the application of solid state devices to VHF and UHF circuits. Studies wave propagation, antenna properties, field strength measurements and detector operation.

AT 236. FCC REGULATIONS. Class 3, cr. 3.

Investigates the FCC Regulations and their application to aircraft communications systems. Forms and applications required for reporting to FCC will be studied.

AT 237. AVIONICS LABORATORY IV. Lab. 6, cr. 2. To be taken concurrently with AT 233 and AT 234.

Includes work with magnetrons, wave guides and electron deflection in CR tubes. Introduction to safety procedures and hazards, from microwave radiation. Demonstrates distance measuring and position determination.

UNDERGRADUATE LEVEL

Upper-Division Classes

AT 321. AIRWAYS PROCEDURES V. Class 2, cr. 2. Continuation of and must be preceded by AT 225.

AT 322. CREW COORDINATION II. Class 1, Lab. 3, cr. 2. Continuation of and must be preceded by AT 226.

AT 323. AERODYNAMICS FOR AIRMEN. Class 2, Lab. 9, cr. 5.

This course is to give the student a better than layman's understanding of the engineering and design of aircraft. It will feature flight characteristics, mechanical forces, and physical reactions.

AT 324. FLIGHT SCHEDULES III. Lab. 24, cr. 8.

Continuation of and must be preceded by AT 228.

DEPARTMENT OF ENGINEERING TECHNOLOGY

Professor Rountree in Charge

BUILDING CONSTRUCTION TECHNOLOGY

Assistant Professors: (Fort Wayne) Smith; (Indianapolis) Scholl.
Instructor: (Calumet) Hutton.
Lecturers: (Calumet) Armstrong, Barney, Callentine, Carras, Maloney Spalding, Todd, Walker; (Fort Wayne) Rammel, Weigand; (Indianapolis) Davis, Jones, Ostheimer, Thompson; (Michigan City) Johnson.

UNDERGRADUATE LEVEL

Lower-Division Courses

BC 104. PLAN READING. Class 1, cr. 1.

Conventional representations as used in building trades, plans, and basic specifications: methods of showing plans, elevations, sections, and dimensions; symbols used to depict materials; definitions of common terms occurring on building plans; specifications as written for small buildings.

BC 116. ARCHITECTURAL DRAWING. Lab. 6, cr. 2.

Introduction to architectural drawing, including use of instruments, lettering, orthographic projection, isometric views, and simple working drawings.

BC 156. FRAME CONSTRUCTION. Class 1, Lab. 6, cr. 3. Must be preceded by BC 116.

Problems of wood frame structure, such as houses, details, and elementary design.

BC 164. BUILDING MATERIALS. Class 3, cr. 3.

Properties and use of materials as found in building construction.

BC 172. SYSTEMS OF CONSTRUCTION. Class 2, cr. 2.

Survey of different types of construction, including wood, steel, and reinforced concrete and curtain walls, considering the characteristics, advantages, and limitations.

BC 204. BUILDING REGULATIONS. Class 2, cr. 2.

Building codes, ordinances, and regulations, with emphasis on those for structures in Indiana.

BC 220. CONCRETE AND MASONRY CONSTRUCTION. Class 1, Lab. 6, cr. 3. Must be preceded by BC 116.

Preparation of drawings for light masonry structures, such as small buildings and stores; analysis of design, strength, and construction details.

BC 236. ARCHITECTURAL PROJECTIONS. Lab. 6, cr. 2. Must be preceded by BC 156.

Introduction to projection, intersections, shading and shadows, and perspective drawing.

BC 241. ARCHITECTURAL DESIGN I. Lab. 6, cr. 2. Must be preceded by BC 116 and BC 156.

Planning, development and architectural delineation of small structures; using pencil, charcoal and water color.

BC 242. ARCHITECTURAL DESIGN II. Lab. 6, cr. 2. Must be preceded by BC 241.

Continuation of Architectural Design I with emphasis on large structures.

BC 248. HISTORY OF ARCHITECTURE I. Class 2, cr. 2.

Survey of the architectural periods, styles, and influence of cultures, which led to the development of architecture from earliest written historical times to the present day.

BC 249. HISTORY OF ARCHITECTURE II. Class 2, cr. 2. Must be preceded by BC 248.

Survey of architectural periods, styles and the influence of cultures which led to the development of architecture from the Romanesque period to the present day.

BC 256. STRUCTURAL DRAFTING. Class 1, Lab 6, cr. 3. Must be preceded by BC 156 or 220, 236, and DM 212.

Detailing simple structural steel, reinforced concrete, and wood structures; elementary design principles.

BC 265. STRUCTURES I. Class 3, cr. 3. Must be preceded by DM 212 and Math 112.

Design of wood and steel frame structures.

BC 266. STRUCTURES II. Class 1, Lab. 6, cr. 3. Must be preceded by Structures I (BC 265).

Design of wood and steel trusses.

BC 272. SPECIFICATIONS AND CONTRACT DOCUMENTS. Class 4, cr. 4. Must be preceded by BC 152 and 216.

Preparation of general conditions and major phases of building construction specifications, agreements, contracts, liens, and bonds.

BC 276. SPECIFICATIONS AND CONTRACT DOCUMENTS. Class 2, cr. 2. Must be preceded by BC 156 and 220, and accompanied or preceded by English 421.

Preparation of general conditions and major phases of building construction specifications, study agreements, contracts, liens, and bonds.

BC 278. BUILDING CONSTRUCTION PRACTICES. Class 2, cr. 2. Must be preceded or accompanied by GN 268 and BC 276.

Extensive survey of business practices and problems common to the construction industry.

BC 280. QUANTITY SURVEY. Class 2, Lab. 3, cr. 3. Must be preceded by BC 156 and BC 164.

Approximate and detailed methods of estimating materials and labor required to erect a building.

BC 284. HEATING, VENTILATING, AIR CONDITIONING, AND ILLUMINATION. Class 2, cr. 2.

Survey course of the different types of systems and their applications.

BC 288. ELEMENTARY SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by MA 112.

Plane surveying using 100-ft. steel tape, level, and transit.

BC 292. ESTIMATING. Class 3, cr. 3. Must be preceded by BC 156, 164, and 220.

Approximate and detailed methods of estimating materials and labor required to erect a building.

UNDERGRADUATE LEVEL
Upper-Division Courses

BC 320. BUILDING FINANCE. Class 2, cr. 2.

Legal and financial regulations and restrictions affecting financial aspects of building construction.

BC 336. REINFORCED CONCRETE DESIGN. Class 4, cr. 4. Must be preceded by DM 212 or by permission.

Basic concrete design as applied to beams and girders, one- and two-way slabs, columns, and footings.

BC 340. CONSTRUCTION METHODS. Class 4, cr. 4. Must be preceded by BC 156 and 220.

Methods used in erecting buildings.

BC 356. HEATING, VENTILATING, AND AIR CONDITIONING. Class 4, cr. 4. Must be preceded by PS 176.

Types of heating systems, heat transmission and insulation, heat exchangers, fans and ducts, air-vapor mixtures, air conditioning.

BC 396. BUILDING CONSTRUCTION TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 2 to 5.

Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff. Primarily for students who have completed requirements for the Diploma in Applied Technology.

CHEMICAL AND METALLURGICAL TECHNOLOGY

Lecturers: (Calumet) Asherman, Crane, Fitzpatrick, Garst, Gassler, Goeckner, Golding, Klimek, Yarotsky.

SPECIAL SERVICE COURSES

CM 8. STEEL PRODUCTION PROCESSES I. Class 3, $45.

Survey of essential processes in the production of steel.

CM 16. STEEL PRODUCTION PROCESSES II. Class 2, $30. Must be preceded by CM 8.

Continuation of CM 8.

CM 24. CHEMISTRY OF STEELMAKING II. Class 2, Lab. 2, $53. Must be preceded by PS 4.

Continuation of PS 4.

CM 56. FERROUS METALLURGY I. Class 2, $30. Must be preceded by PS 4 and CM 8, 16, and 24.

The basic principles of ferrous metallurgy and an understanding of their application to steel production.

CM 64. FERROUS METALLURGY II. Class 2, $30, Must be preceded by CM 56.

Continuation of CM 56.

CM 72. METALLURGY OF SHEET AND TIN. Class 2, $30.

Basic production units and the chemistry and metallurgy involved. History of tin plate making and study of production problems.

UNDERGRADUATE LEVEL

Lower-Division Courses

CM 154. INDUSTRIAL CHEMISTRY. Class 3, Lab. 3, cr. 4. Must be preceded by MA 111 and PS 120.

Quantitative interpretations of chemical equations by numerical problems and practical application to industrial processes, using the principles of introductory chemistry.

CM 184. FERROUS METALLURGY. Class 3, cr. 3. Must be preceded or accompanied by CM 154.

Appliances and methods used in the reduction, refining, and shaping of ferrous alloys.

CM 212. INDUSTRIAL CHEMISTRY: QUALITATIVE. Class 1, Lab. 6, cr. 3. Must be preceded by PS 120 and MA 112.

Systematic semimicro analysis, with emphasis upon modern industrial techniques.

CM 228. PHYSICAL METALLURGY. Class 3, Lab. 3, cr. 4. Must be preceded by CM 184 or PS 176.

Basic principles: solid solutions, intermetallic compounds, equilibrium diagrams, plastic deformation, recrystallization and grain growth, heat treatment, and phase changes in the solid state.

CM 240. HEAT TRANSFER. Class 2, Lab. 3, cr. 3. Must be preceded by MA 112 and PS 176.

Fundamentals of heat transfer as applied to furnaces, heat exchanges, steam generators, cooling towers, evaporators, and distilling equipment.

CM 252. INDUSTRIAL CHEMISTRY: QUANTITATIVE. Class 1, Lab. 6, cr. 3. Must be preceded by CM 212.

An introduction to gravimetric, titrimetric, and potentiometric methods applicable to modern industrial practices.

CM 280. NONFERROUS METALLURGY. Class 2, cr. 2. Must be preceded or accompanied by CM 152.

Fundamentals of production metallurgy, with specific consideration of the methods employed in the reduction and refining of selected nonferrous metals.

CM 284. METALLOGRAPHY. Class 1, Lab. 6, cr. 3. Must be preceded by CM 228.

Preparation and microscopic examinations of metals.

UNDERGRADUATE LEVEL

Upper-Division Courses

CM 396. CHEMICAL AND METALLURGICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 2 to 5. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.

Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in chemical and metallurgical technology.

CIVIL TECHNOLOGY

Assistant Professor: (Indianapolis) Norris.

UNDERGRADUATE LEVEL

Lower-Division Courses

CT 104. CONSTRUCTION MATERIALS. Class 2, cr. 2.

A study of the various materials used in steel and concrete structures and highway construction.

CT 152. FUNDAMENTALS OF SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded or accompanied by MA 112.

Measurement of distances, elevations, directions, and angles, using tape, level, compass, and transit. Computation of areas and traverses, city surveys, lines and grades, and plotting of field notes.

CT 172. HIGHWAY STRUCTURAL DRAFTING. Class 1, Lab. 3, cr. 2. Must be preceded by DM 108.

The preparation of detail drawings for steel and concrete structures, including layout principles.

CT 204. LAND SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by CT 152.

Theory and practice of land surveying, subdivision, filing and recording deeds, United States government survey of public lands, laws of land surveying, descriptions, area computations, county planning, zoning highways, and the Indiana land lot system of land subdivision.

CT 208. ROUTE SURVEYING. Class 1, Lab. 3, cr. 2. Must be preceded by CT 152.

Preliminary and construction surveys for highways and railroads, including simple, compound, reverse, and easement curves, superelevation of curves, profiles, grade lines, slope stakes, yardage estimates, and mass and haul diagrams.

CT 216. GRAPHIC STATICS. Lab. 3, cr. 1. Must be preceded by PS 136 and MA 112. Should be scheduled concurrently with DM 212.

The use of graphical methods in calculating reactions and stresses, and their application in different types of structural problems.

CT 232. COSTS AND ESTIMATES. Class 2, cr. 2. Must be preceded or accompanied by CT 264 and BC 276.

Approximate and detailed methods of estimating materials and labor from actual working drawings and specifications.

CT 252. HYDRAULICS. Class 2, cr. 2. Must be preceded by DM 212.

Fundamental principles of fluid mechanics, including flow through pipes and channels and over weirs.

CT 256. INSPECTING AND TESTING PROCEDURES. Class 1, Lab. 3, cr. 2. Must be preceded by PS 120 and 136, DM 212, and/or accompanied by CT 264.

Basic theory involved in sampling various materials used in highway construction, including screening aggregates, cement yield test, air content, soil compaction, and bituminous control test.

CT 260. HIGHWAYS. Class 2, cr. 2. Must be preceded by CT 104 and 208.

Highway planning, administration, finance, location, design, construction, subgrade stability, maintenance, and operation.

CT 264. STEEL AND CONCRETE CONSTRUCTION. Class 2, Lab. 3, cr. 3. Must be preceded by CT 216 and/or concurrent with CT 260.

A study of beams, girders, and columns in steel and concrete structures, including steel frameworks, bridge trusses, simple reinforced concrete structures; the determination of direct and bending stress in beams, slabs, girders, and columns.

CT 272. PHOTOGRAMMETRY. Lab. 3, cr. 1. Must be preceded by CT 204 and 208.

The use of maps and charts from aerial photographs by use of stereoscopic and ground survey methods as well as specifications and requirements for aerial surveys.

CT 276. BITUMINOUS MATERIALS. Class 1, cr. 1. Must be preceded by PS 120, CT 104, and/or accompanied by CT 260.

Bituminous materials used in highway construction and maintenance, types, specifications, and methods of use.

DRAFTING AND MECHANICAL TECHNOLOGY

Associate Professor: (Fort Wayne) Cox.
Assistant Professors: (Calumet) Zacher; (Michigan City) Lisarelli.
Instructor: (Indianapolis) Stoelk.
Lecturers: (Calumet) Cannella, Crane, Erickson, Kahl, Klikunas, Metz, Miller, Peters, Rosencrans, Rice, Somers, Teller, Williams, Yarotsky, Young; (Fort Wayne) Boeckel, Brokaw, Young; (Indianapolis) Dalton, Hillsman, Robbins, Ross, Schooley, Spray; (Michigan City) Coburn, Tamber.

SPECIAL SERVICE COURSES

DM 8. FERROUS MATERIALS AND PROCESSES. Class 2, $30.

Applications and characteristics, both physical and chemical, of the more common ferrous materials; the mechanical processes by which they may be shaped or formed.

DM 24. MECHANICAL MAINTENANCE PRINCIPLES. Class 4, $60.

Principles and practices of modern mechanical maintenance.

DM 25. MECHANICAL MAINTENANCE PRINCIPLES—PART I. Class 2, $30.

First half of DM 24.

DM 26. MECHANICAL MAINTENANCE PRINCIPLES—PART II. Class 2, $30.

Second half of DM 24.

DM 28. ADVANCED MECHANICAL MAINTENANCE PRINCIPLES. Class 4, $60.

Continuation of DM 24.

DM 29. MECHANICAL MAINTENANCE PRINCIPLES—PART III. Class 2, $30.
First half of DM 28.

DM 30. MECHANICAL MAINTENANCE PRINCIPLES—PART IV. Class 2, $30.
Second half of DM 28.

DM 52. TECHNICAL DRAWING AND FREEHAND DRAFTING. Lab. 4, $46. Must be preceded by PS 60.
Introduction to technical drawing and freehand drafting, including use of instruments, lettering, orthographic projection, and blueprint reading. Preparation of working details and assembly drawings from simple layouts, with emphasis upon industrial practice.

DM 60. MECHANICS: STATICS. Class 3, $45. Must be preceded by PS 60, PS 40.

DM 63. MECHANICS. Class 2, $30.
Problem-solving course in statics, strength of materials, pneumatics, and hydraulics.

DM 64. MECHANICS: STATICS, DYNAMICS, AND STRENGTH OF MATERIALS. Class 6, $90. Must be preceded by PS 30, 14, and 40.
Analytical studies of forces and motions acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, friction, centroids, center of gravity, moments of inertia, work energy, power, impulse and momentum, stress, strain, tension, compression, shear, riveted and welded joints, beams, shafts, and columns.

DM 68. STRENGTH OF MATERIALS. Class 2, $30. Must be preceded by DM 60.
A study of the elastic behavior of engineering materials, stress, strain, tension, compression, shear, riveted and welded joints, beams, shafts, and columns.

DM 72. TECHNICAL AND FREEHAND DRAFTING—PART I. Lab. 2, $23. Must be preceded by PS 60.
Introduction to technical drawing, including use of instruments, lettering, orthographic projection, and blueprint reading. Preparation of working details and assembly drawings from simple layouts, with emphasis upon industrial practices.

DM 73. TECHNICAL AND FREEHAND DRAFTING—PART II. Lab. 2, $23.
Continuation of DM 72.

DM 74. MECHANICAL DRAWING AND FREEHAND SKETCHING. Lab. 2, $23.
Introduction to technical drafting, including use of instruments, lettering, and orthographic projection.
Emphasis on freehand sketching.

DM 75. MECHANICAL ANALYSIS AND BLUEPRINT READING. Class 1, $15.
Analysis of machines from the standpoint of serviceability, systems of lubrication, strength, and motion.

DM 76. ADVANCED DRAWING AND MECHANISMS. Lab. 4, $46. Must be preceded by DM 52.
Advanced drafting practices, including developments, blueprint reading, and kinematic drawings, with graphical solutions to problems.

DM 78. MECHANISMS. Class 1, $15.
Motion of machine members; special consideration given to mechanism used in steel mills.

DM 80. MECHANICAL ANALYSIS. Class 3, $45.
A discussion of the more important elements used in machines, such as bearings, gears, cams, clutches, and brakes; principles of lubrication; fundamental industrial application of hydraulics and pneumatics; analysis of machines from the standpoint of serviceability, systems of lubrication, strength, and motion.

DM 88. FUELS AND COMBUSTION. Class 2, $30.
Study of types and kinds of fuels and their behavior under varied conditions.

UNDERGRADUATE LEVEL

Lower-Division Courses

~~DM 108~~. TECHNICAL DRAWING. Class 1, CES 110 Lab. 6, cr. 3.
Introduction to technical drawing, including use of instruments, lettering, and orthographic projection. Preparation of working detail and assembly drawings, with emphasis upon industrial practices. Primarily intended to develop the basic skills and fundamentals of industrial drafting.
A basic course intended to develop special perceptive abilities.

~~DM 156.~~ GRAPHICAL COMPUTATIONS. CES 212 Class 1, Lab. 6, cr. 3. Must be preceded by DM 108 and preceded or accompanied by MA 112.

Descriptive and analytic geometry principles applied to the solution of engineering problems; intersections and development of planes and solids; layout of objects in space; and determination of clearances between objects in space.

DM 180. MATERIALS AND PROCESSES. Class 3, cr. 3.

Application and characteristics, both physical and chemical, of the materials most commonly used in industry; the mechanical processes by which materials may be shaped or formed.

DM 200. ADVANCED MATERIALS AND PROCESSES. Class 3, cr. 3. Must be preceded by DM 180.

A continuation of DM 180 with more emphasis placed on the newer materials and processes, specific machines needed to perform various operations, relative costs. Setting up production and process routing for various parts to be manufactured.

DM 204. MACHINE AND TOOL DRAWING. Class 1, Lab. 6, cr. 3. Must be preceded or accompanied by DM 156 and 180.

Preparation of complete working drawings from layouts for interchangeable manufacturer; computation of fits, limit dimensions, and tolerances; tool drawing principles and methods.

DM 212. MECHANICS OF MATERIALS. Class 4, cr. 4. Must be preceded by PS 136 and MA 112.

Forces acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, centroids, center of gravity and moments of inertia, stress and strain, riveted and welded joints, torsion, shear, bending and deflection of beams, combined stresses and columns.

DM 216. MACHINE ELEMENTS. Class 3, cr. 3. Must be preceded by DM 200, and preceded or accompanied by DM 252.

A survey course of the more important elements used in machines, and their general characteristics as pertains to operational behavior, efficiency, and economy. Fundamental principles of tool and die design. Typical mechanisms used in machines, and their kinematic analysis.

DM 220. ELEMENTARY MACHINE DESIGN. Lab. 6, cr. 2. Must be preceded or accompanied by DM 200 or 216.

This course is set up to include a minimum of strength calculations, and is directed toward the preparation of working drawings of machine elements. The student works from layouts with a minimum of information so that self-reliance in detailing may be developed. The course will include and emphasize the following: drafting simplification, functional dimensioning, working drawings, assembly drawings, correct detailing of machine elements, such as gears, cams, etc., working with manufacturers catalogs, realistic fits and tolerances, and kinematic layout.

DM 224. MECHANICS: STATICS AND DYNAMICS. Class 4, cr. 4. Must be preceded by PS 136 and preceded or accompanied by MA 112.

Analytical and graphical studies of forces and motions acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, friction, centroids, center of gravity, moments of inertia. Kinematics and kinetics of rectilinear, curvilinear, and rotational motion. Work, energy, power, impulse, and momentum.

DM 228. MACHINE DESIGN I. Class 2, Lab. 3, cr. 3. Must be preceded by DM 204, PS 176, and preceded or accompanied by DM 212.

Fundamental principles of the design and construction of general purpose and related production machines. Hydraulic, pneumatic, and electrical machine control circuits and equipment. Mechanical design and mechanisms as utilized for general purpose and special machine construction.

DM 236. JIGS, FIXTURES, AND GAGES. Class 2, Lab. 6, cr. 4. Must be preceded by DM 204.

Fundamental principles of the design and construction of drill and combination jigs, milling, reaming, and tapping fixtures. Gage characteristics, selection, and design for interchangeable manufacture.

DM 252. STRENGTH OF MATERIALS. Class 4, cr. 4. Must be preceded by DM 224.

Stress and strain, riveted and welded joints, torsion, shear, bending and deflection of beams, combined stresses and columns.

DM 256. MACHINEABILITY. Class 3, cr. 3. Must be preceded by DM 180.

Physical properties of metals, plastics, and other materials as related to special techniques and methods used to cut or machine these materials.

DM 264. MACHINE DESIGN II. Class 2, Lab. 3, cr. 3. Must be preceded by DM 228.

A continuation of DM 228.

Application of principles in design and construction of machines. Problems in the design of machines in conformance with the latest developments in industry.

DM 288. DIE DESIGN. Class 2, Lab. 6, cr. 4. Must be preceded or accompanied by DM 204.

Fundamental principles of the design and construction of piercing, blanking, forming, drawing, progressive and compound dies.

DM 292. APPLIED MACHINE DESIGN. Lab. 6, cr. 2. Must be preceded by DM 200, 216, 220, and 252.

Applications and utilization of the courses previously taken to complete basic and selective design problems. These problems will involve tool design, general machine design, piping design, and pneumatic and hydraulic systems. Emphasis will be placed upon designing for strength serviceability, economy, and reliability. The student will be required to start some problems from the sketching state and follow through to completion with such phases as layout, calculations, details, assembly, and bills of material.

DM 294. MECHANICAL ANALYSIS. Class 4, cr. 4. Must be preceded or accompanied by DM 292.

The first part of this course will be devoted to force analysis and strength calculations on various representative machine members. The second part of the course will be devoted to general analysis of typical machines from the standpoint of force, motion, efficiency, serviceability, function, economy, lubrication, etc. Actual designs will be reviewed and discussed.

DM 296. MACHINE TOOL LABORATORY. Lab. 3, cr. 1. Must be preceded or accompanied by DM 180.

Two weeks' course consisting of 48 laboratory hours of instruction offered at the Lafayette campus on a full-time basis or on the eight Saturdays during the regular summer session.

To acquaint students with the uses and limitations of general purpose and production machines as well as with integrating processes of foundry welding, heat treating, and inspection into production planning.

ELECTRICAL TECHNOLOGY

Associate Professors: (Calumet) Anderson; (Indianapolis) Wisner.

Assistant Professors: (Calumet) Bucich, Rapal, Rhodes; (Fort Wayne) Gideon; (Indianapolis) Rainey.

Instructor: (Fort Wayne) Young.

Lecturers: (Calumet) Belshaw, Bergstedt, Boroviak, Cole, Corbin, Gerdt, Hobbs, Whitesell; (Indianapolis) Brodhecker, Groves, Schultz, Van Osdol.

SPECIAL SERVICE COURSES

ET 8. ELECTRICAL LABORATORY. Lab. 2, $23.

Electrical equipment operation and maintenance practices.

ET 24. ELECTRICAL MAINTENANCE PRINCIPLES. Class 4, $60.

Principles and practices of modern electrical maintenance.

ET 25. ELECTRICAL MAINTENANCE PRINCIPLES—PART I. Class 2, $30.

First half of ET 24.

ET 26. ELECTRICAL MAINTENANCE PRINCIPLES—PART II. Class 2, $30.

Second half of ET 24.

ET 28. ADVANCED ELECTRICAL MAINTENANCE PRINCIPLES. Class 4, $60.

Continuation of ET 24.

ET 29. ELECTRICAL MAINTENANCE PRINCIPLES—PART III. Class 2, $30.

First half of ET 28.

ET 30. ELECTRICAL MAINTENANCE PRINCIPLES—PART IV. Class 2, $30.

Second half of ET 28.

ET 36. ELECTRICAL BLUEPRINTS AND DIAGRAMS. Class 2, $30.

A study of blueprints and diagrams related to electrical systems and controls normally used in steel mills.

ET 40. DC CIRCUITS AND MACHINES. Class 3, Lab. 2, $68. Must be preceded by PS 36 and preceded or accompanied by PS 28.

DC machines and apparatus from the viewpoint of construction details, industrial application, and methods of operation.

ET 48. ELECTRICAL MAINTENANCE—PART I. Class 3, $45.

A brief consideration of the theory and practice of the maintenance of electrical machines and controls centered about a series of graded blueprints in such manner that the student becomes familiar with blueprint reading as he studies basic theory and practice.

ET 49. ELECTRICAL MAINTENANCE—PART II. Class 3, $45.

Continuation of ET 48.

ET 50. ELECTRICAL MAINTENANCE—PART III. Class 3, $45.

Continuation of ET 49.

ET 52. AC CIRCUITS. Class 3, Lab. 2, $68. Must be preceded by ET 40.

Nature of alternating current, methods of generation, single-phase currents, polyphase currents; practical concepts of power, power-factor, reactive factor, reactance and impedance; simple AC circuit calculations.

ET 56. BASIC ELECTRONICS AND ELECTRICAL CIRCUITS. Class 2, $30.

Practical fundamentals of electrical circuits and electronics.

ET 60. AC MACHINES. Class 3, Lab. 2, $68. Must be preceded by ET 52.

Construction details and practical performance of transformers, induction motors, alternators, synchronous motors, rectifiers, and other common alternating current apparatus.

ET 68. MOTOR CONTROL. Class 3, $45.

Application of controllers for electric motors used in the steel industry.

ET 76. SURVEY OF ELECTRONICS. Class 3, $45. Must be preceded by ET 52.

A survey of electronics as it applies to controls used in industry.

ET 78. ELECTRICAL MAINTENANCE AND BLUEPRINTS. Class 3, Lab. 2, $68.

Discussions on scheduled inspection programs, trouble shooting, and preventive maintenance equipment used in the steel mill.

ET 92. INDUSTRIAL ELECTRONICS. Class 2, $30.

Principles of operation and industrial applications of the common types of vacuum and gas tubes, photo-electric cells, and cathode ray tubes.

UNDERGRADUATE LEVEL
Lower-Division Courses

ET 104. ELECTRONICS I—CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by PS 176 and MA 111.

A study of the principles of operation and industrial applications of the more common types of vacuum and gas tubes, photo-electric cells, and cathode ray tubes. The simple basic circuits using these tubes are studied and their applications emphasized.

ET 156. ELECTRONICS II—SEMI-CONDUCTORS; TRANSISTORS. Class 2, Lab. 3, cr. 3. Must be preceded by ET 104 and preceded or accompanied by ET 176.

A study of the theory and application of transistors and other semi-conductors, with emphasis placed upon practical uses of these devices in industrial and communication circuits, including study of crystal diodes as detectors, diode power applications, and applications of transistors.

ET 176. ELECTRICAL CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by MA 112, and ET 104.

Nature of direct and alternating current electricity and practical applications of theory to concepts involving: resistance, simple circuits, power, power factors, reactance, impedance, simple DC and AC circuit calculations, and complex notation.

ET 208. AC AND DC MACHINES AND CONTROLS. Class 2, cr. 2. Must be preceded by ET 176.

The elementary study of AC and DC machines and their controls. This includes accelerating relays, protective relays, circuit breakers, controllers, and contractors.

ET 212. ELECTRICAL MACHINES. Class 4, Lab. 3, cr. 5. Must be preceded by ET 176.

Particular emphasis is placed on operational theory and application of both AC and DC machines in industry. Transformers and their roles in industry are studied, and industrial electrical systems are analyzed.

ET 224. FUNDAMENTALS OF TELEVISION. Class 2, cr. 2. Must be preceded or accompanied by ET 236.

Principles of television transmission and receiver systems, frequency modulation, and standards set by the Federal Communications Commission.

ET 228. POWER DISTRIBUTION. Class 2, cr. 2. Must be preceded or accompanied by ET 212.

A study of the equipment used in transmission and distribution of electrical energy from generating station to consumer, including overhead and underground circuits, high and low voltage circuits, overload and short circuits, and indoor and outdoor lighting.

ET 236. ELECTRONICS III—RADIO CIRCUITS. Class 4, Lab. 3, cr. 5. Must be preceded by ET 156 and ET 176.

Structural details and elementary principles of operation of rectifiers, amplifiers of various types, modulation, demodulation, receivers and their characteristics.

ET 252. ELECTRIC POWER BLUEPRINTS AND DIAGRAMS. Class 1, Lab. 3, cr. 2. Must be preceded by DM 108, and preceded or accompanied by ET 268.

A practical study of symbols and standards used on electrical blueprints and writing diagrams primarily for control circuits.

ET 256. ELECTRONICS IV—TRANSMITTERS. Class 2, Lab. 3, cr. 3. Must be preceded by ET 236.

The study of transmitters, special circuits for wave shaping, filters, UHF, and transmission lines as used in UHF.

ET 257. ELECTRONICS IV—TRANSMITTER. Class 3, cr. 3. Must be preceded by ET 236.

The study of transmitters, special circuits for wave shaping, filters, UHF, and transmission lines as used in UHF.

ET 264. ELECTRICAL MEASUREMENTS. Class 3, Lab. 3, cr. 4. Must be preceded by ET 176.

A study of the principles of operation and the construction of direct and alternating current measuring instruments. Careful consideration is given to the choice of the best instruments, their possible errors, the means of calibration, and their correct use in industrial situations.

ET 268. CONTROL OF ELECTRIC MOTORS. Class 4, cr. 4. Must be preceded or accompanied by ET 212.

Accelerating relays, protective relays, circuit breakers, controllers, and contractors used in industry are studied. Circuit diagrams for starting, accelerating, and regulating industrial drives are thoroughly analyzed. Controls for adjustable voltage systems are discussed. Dynamic crane and traction controls are included in this course.

ET 272. AUTOMATION AND ELECTRONIC CONTROL. Class 4, Lab. 3, cr. 5. Must be preceded by ET 212 or 208 and by ET 236 for option C. A study of automatic control devices. Included are application of automatic feedback and regulating systems. Induction heating, resistance welding, process timing, motor controls, and associated circuits are also examined.

ET 273. AUTOMATION AND ELECTRONIC CONTROL. Class 5, cr. 5. Must be preceded by ET 212 or ET 208 and by ET 236 for option C.

A study of automatic control devices. Included are application of automatic feed-back and regulating systems. Induction heating, resistance welding, process timing, motor controls, and associated circuits are also examined.

ET 276. ELECTRONIC TROUBLE SHOOTING. Lab. 6, cr. 2. Must be preceded by ET 236 and 208 or 224.

Laboratory practice and the use of test instruments in methods of locating faults in AM and FM receivers, television, and industrial circuits.

ET 292. TELEVISION CIRCUITS. Class 3, Lab. 3, cr. 4. Must be preceded by ET 224 and 236.

Study of power supplies, video amplifiers, detectors, synchronization, deflection generator, FM detection, audio amplifiers, alignment, and antennas.

ET 296. COLOR TELEVISION. Class 3, Lab. 3, cr. 4. Must be preceded or accompanied by ET 292.

Principles of color vision, color combination, chromaticity, and color picture tubes. Color transmission by television. Detector matrix and synchronization circuits.

ET 297. COLOR TELEVISION. Class 4, cr. 4. Must be preceded by ET 292.

Principles of color television, color combination, chromaticity, and color picture tubes. Color transmission by television. Detector matrix and synchronization circuits.

UNDERGRADUATE LEVEL

Upper-Division Courses

ET 340. APPLICATIONS OF ELECTRONICS TO INDUSTRY. Class 4, Lab. 3, cr. 5. Must be preceded by ET 104.

Circuits using electron tubes to control or measure, such as resistance welding, elevator leveling, counting, sorting, high-frequency heating, photometric measurements.

ET 396. ELECTRICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 2 to 5. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.

Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in electrical technology. The primary objective of this course is to provide the advanced student with the opportunity to select and develop individual projects under the supervision of the staff. The student makes use of the knowledge and the many techniques acquired in the basic two-year electrical technology curriculum.

INDUSTRIAL TECHNOLOGY

Assistant Professors: (Indianapolis) Jenks; (Calumet) Malone; (Fort Wayne) Wilson.
Lecturer: (Calumet) Butler, Gray, Hindmarch, Lutz; (Fort Wayne) Hicks, Persing, Webster; (Indianapolis) Blaase, Dever, Flagg, K. Reed, Zimmerman; (Michigan City) J. Reed, Stevens.

SPECIAL SERVICE COURSES

IT 4. INDUSTRIAL ORGANIZATION AND PRODUCTION. Class 4, $60.

A detailed survey of organizational structures; operational, financial, marketing, and accounting activities; duties of management, planning, control, personnel, safety, wages, policy, and human factors necessary for effective management.

IT 5. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART I. Class 2, $30.

First half of IT 4.

IT 6. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART II. Class 2, $30.

Second half of IT 4.

IT 8. INDUSTRIAL ORGANIZATION. Class 2, $30.

An introduction to the types of industrial organization and techniques of control.

IT 9. INDUSTRIAL ORGANIZATION—PART I. Class 1, $15.

First half of IT 8.

IT 10. INDUSTRIAL ORGANIZATION — PART II. Class 1, $15.

Second half of IT 8.

IT 32. HUMAN RELATIONS IN INDUSTRY. Class 2, $30. Must be preceded by GN 20, IT 4.

A study of industrial personnel problems. Relations of the supervisor and his men.

IT 33. HUMAN RELATIONS IN INDUSTRY —PART I. Class 1, $15. Must be preceded by GN 20, IT 4.

IT 34. HUMAN RELATIONS IN INDUSTRY —PART II. Class 1, $15. Must be preceded by IT 33.

Second half of IT 32.

IT 40. PRODUCTION COST ANALYSIS. Class 2, $30.

A study of a typical industry's cost analysis procedure and methods.

IT 48. JOB EVALUATION AND WAGE INCENTIVES. Class 2, $30.

Study of basic principles involved in establishing wage incentive rates through job study and classification as well as the problems connected with installation and maintenance of wage incentives.

UNDERGRADUATE LEVEL

Lower-Division Courses

IT 104. INDUSTRIAL ORGANIZATION AND PRODUCTION. Class 4, cr. 4.

A detailed survey of organizational structures; operational, financial, marketing, and accounting activities; duties of management, planning, control, personnel, safety, wages, policy, and human factors necessary for effective management.

IT 105. BUSINESS ORGANIZATION. Class 2, cr. 2.

Survey of organizational structures; operational, financial, marketing, and accounting activities; and human factors necessary for effective management of a small business. (First half of IT 104).

IT 152. HUMAN RELATIONS IN INDUSTRY. Class 2, cr. 2. Must be preceded by PSY 120 and IT 104.

A study of industrial personnel problems. Relations of the supervisor and his men.

IT 212. INDUSTRIAL SAFETY. Class 2, cr. 2. Must be preceded by IT 104.

Safety fundamentals as related to the economics of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, plant housekeeping, occupational diseases, first aid, safety organization, protective equipment, and the promotion of safe practices.

IT 224. PRODUCTION PLANNING AND CONTROL. Class 3, Lab. 3, cr. 4. Must be preceded by DM 180 and IT 152.

Preproduction planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control.

IT 227. PRODUCTION PLANNING AND CONTROL. Class 3, cr. 3. Must be preceded by DM 180 and IT 152.

Preproduction planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control. (Same as IT 224 without laboratory.)

IT 244. FUNDAMENTALS OF PRODUCTION COST. Class 1, Lab. 3, cr. 2. Must be preceded by IT 104.

Fundamental mechanics (rules for debit and credit) of accounting, principles of account classification, business forms and procedures, financial and operating statements, and elements of cost accounting—all from the viewpoint of industrial organization.

IT 248. PRODUCTION COST ANALYSIS. Class 1, Lab. 3, cr. 2. Must be preceded by IT 244.

Specific applications of production cost theories to principles developed through study of selected case problems.

IT 260. MOTION AND TIME STUDY. Class 2, Lab. 3, cr. 3. Must be preceded by IT 152, DM 180, and MA 112.

Techniques of motion and time study, process charts, operation charts, multiple activity charts, micromotion study, therbligs, and stop-watch time study.

IT 268. PLANT LAYOUT. Class 2, Lab. 3, cr. 3. Must be preceded by DM 108, IT 224 and 260.

Arrangement of stock, machines, layout of aisles, and use of space, and material handling for the highest efficiency of production.

IT 272. JOB EVALUATION. Class 2, cr. 2. Must be preceded by IT 152 and MA 112.

A survey of the basic principles and significance of job evaluation. An analysis of current practices and techniques used in job analysis, job descriptions, and job evaluation.

IT 280. WAGE INCENTIVES. Class 2, cr. 2. Must be preceded by IT 260 and 272.

An analysis and study of various types of wage incentive plans, their significance, adaptability, effectiveness, and equitability. A systematic appraisal of the basic objectives and currently used techniques in the administration of wage incentive programs.

IT 296. INDUSTRIAL TECHNOLOGY CASE PROBLEMS. Class 2, cr. 2.

Application of theories developed in the several industrial technology courses to selected general case problems—to provide practice in the integration of principles.

UNDERGRADUATE LEVEL

Upper-Division Courses

IT 312. MATERIALS HANDLING. Class 3, cr. 3. Must be preceded by IT 104.

A survey of materials handling elements, the unit load, packaging, bulk handling, the economics of materials handling, improving existing handling methods, justification for handling equipment, special handling techniques, and the management of the materials handling divisions in the industrial organization.

IT 324. PRODUCTION TECHNIQUES. Class 3, cr. 3. Must be preceded by IT 224.

Continuation of operation planning, with emphasis upon the equipment, tools, and techniques used in mass production. Adaptation of proposed plans to conform to existing facilities.

IT 340. COST CONTROL. Class 3, cr. 3.

Standard costs, estimating costs, distribution costs, various systems of cost accounting.

IT 356. PERSONNEL PROBLEMS IN INDUSTRY. Class 2, cr. 2. Must be preceded by IT 152.

Analysis of selected case problems, with emphasis on attitudes, philosophies, and responsibilities of supervisory personnel in relationship to the worker.

IT 360. ADVANCED MOTION AND TIME STUDY. Class 3, Lab. 3, cr. 4. Must be preceded by IT 260.

Operation analysis, micromotion study, simo and possibility charts, standard data, and formula construction.

IT 368. LEGISLATION AFFECTING INDUSTRIAL RELATIONS. Class 4, cr. 4.

Wage contracts and payments, workmen's compensation and insurance, injunction, strikes and boycotts, and statutes affecting labor.

IT 396. INDUSTRIAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 2 to 5.

Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff. Primarily for students who have completed the requirements for the Diploma in Applied Technology. Special studies in industrial technology.

PRACTICAL NURSING

Professor Maginsky in Charge

Assistant Professor: (Calumet) Maginsky.
Instructors: (Calumet) Clayton, Doyle.

SPECIAL SERVICE COURSES

PN 8. VOCATIONAL ETHICS AND PERSONAL HYGIENE. Class 6, $38.

Designed to give the practical nursing student an understanding of ethical and interpersonal relationships with the patient, family, physician, professional nurse, and other coworkers. Includes development of an understanding of the patient's needs by making the student nurse aware of her own physiological, psychological, and community needs.

PN 16. FAMILY LIVING. Class 5, Lab. 4, $74.

Deals with the basic principles for successful family life, with special emphasis on the role of the practical nurse when caring for a patient in his home. Stresses food preparation, meal planning and buying, serving of regular and special diets, budgeting, and organization of home duties in order to provide a clean and wholesome environment for the sick.

Includes normal child development and problems of the aged, with emphasis on the health needs of these two age groups, and the necessity for planned activities to give them security and enrich their lives.

PN 24. NURSING CARE. Class 5, Lab. 11, $63.

Develop skills necessary to give nursing care to the subacute, convalescent, and chronically ill patient, together with an understanding of the basic principles involved. Demonstration and practice of nursing skills form a major portion of this course.

Knowledge of normal pregnancy and common illnesses is included, together with nursing measures required in these specific conditions.

PN 44. MEDICAL CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, $10.

Practical application of acquired nursing skills in the care of the medical patient in the hospital. Classroom instruction includes specialized medical techniques which have not been covered in the preclinical period.

This course is given at Methodist Hospital—Gary, Indiana.

PN. 56. SURGICAL CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, $10.

Practical application of acquired nursing skill in the care of the surgical patient in the hospital. Classroom instruction includes specialized surgical techniques which have not been covered in the preclinical period.

This course is given at St. Catherine's Hospital—East Chicago, Indiana.

PN. 64 MATERNITY CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, $10.

Practical application of acquired nursing skills in the care of mothers and newborn infants in the hospital. Includes two week's experience in the labor and delivery room. Classroom instruction includes specialized maternity and nursery techniques which were not covered in the preclinical period.

This course is given at St. Margaret's Hospital—Hammond, Indiana.

PN 72. PEDIATRICS AND LONG-TERM ILLNESS CLINICAL EXPERIENCE. 8 weeks. Class 4, Lab. 36, $10.

Practical application of acquired nursing skills in the care of children and patients whose conditions require long-term hospitalization. Classroom instruction includes specialized nursing techniques, applicable to these patients, which were not covered in the preclinical period.

This course is given at St. Mary's Mercy Hospital—Gary, Indiana.

MISCELLANEOUS CONTINUATION AND SPECIAL SERVICE COURSES

Dean Lawshe in Charge

GENERAL STUDIES

Assistant Professors: (Calumet) Bowser, Hays, Malone; (Fort Wayne) Poling; (Indianapolis) Ernst; (Michigan City) Nunn.

Lecturers: (Calumet) Beaty, Conrath, Iaconetti, Norris; (Fort Wayne) Stuart; (Indianapolis) Bowles, Burns, Dudley, Eachus, Kearns; (Michigan City) Murphy.

SPECIAL SERVICE COURSES

GN 4. FUNDAMENTALS OF PRACTICAL SPEAKING. Class 2, $30.

Organization and presentation of material, voice and physical delivery, audience reaction.

GN 5. FUNDAMENTALS OF PRACTICAL SPEAKING—PART I. Class 1, $15.

First half of GN 4.

GN 6. FUNDAMENTALS OF PRACTICAL SPEAKING—PART II. Class 1, $15.

Second half of GN 4.

GN 20. PSYCHOLOGY. Class 2, $30.

Selected fundamentals of psychology and their application to the solution of industrial personnel problems.

GN 32. DEMOCRATIC GOVERNMENT. Class 2, $30.

Democratic processes in government and the practices within which they function.

GN 40. ECONOMICS OF INDUSTRY. Class 2, $30.

Economic principles as applied to major industrial problems.

GN 41. ECONOMICS OF INDUSTRY—PART I. Class 1, $15.

First half of GN 40.

GN 42. ECONOMICS OF INDUSTRY—PART II. Class 1, $15.

Second half of GN 40.

GN 52. PHYSICAL EDUCATION. Lab. 1-3, cr. 0, $9 to $27.

In centers where facilities are available, students may avail themselves of instruction in intramural activities.

GN 64. PHYSICAL EDUCATION. Lab. 1-3, cr. 0, $9 to $27.

In centers where facilities are available, students may avail themselves of instruction in intramural activities.

GN 72. PSYCHOLOGY AND HUMAN RELATIONS. Class 2, $30.

A study of selected fundamentals of psychology as related to a supervisor and his men.

UNDERGRADUATE LEVEL

Lower-Division Courses

GN 100. TECHNICAL INSTITUTE ORIENTATION LECTURES. Class 1, cr. 1. Required for all full-time students and must be taken first semester of enrollment.

The organization and services of the university related to the student. The relationships of the engineers, technicians, and tradesmen to one another and to industry. The development and function of the technical institutes and of the separate technologies. Guidance in adapting to the university and preparation for industrial jobs.

GN 104. ENGLISH GRAMMAR AND COMPOSITION. Class 2, cr. 2.

A concentrated view of basic principles of grammar with use of these principles in original written composition. Written and oral work will be stressed early in this course in order that both fields of communication be closely integrated prerequisite to the demands of technical report writing.

GN 120. PSYCHOLOGY. Class 2, cr. 2.

Basic fundamentals of psychology and their application to industrial personnel problems. This course particularly serves as a basis for the consideration of human behavior problems confronting industrial supervision.

GN 152. FUNDAMENTALS OF TECHNICAL WRITING. Class 2, cr. 2. Must be preceded by GN 104, or ENGL 101.

An introduction to technical writing, with emphasis on the techniques of composition and their implementation in letters, short reports, abstracts, etc.

GN 204. FUNDAMENTALS OF PRACTICAL SPEAKING. Class 2, cr. 2.

Organization and presentation of material, voice and physical delivery, audience reaction.

GN 220. TECHNICAL REPORT WRITING. Class 2, cr. 2. Must be preceded by GN 152.

Extensive application of the principles of good writing in industrial reporting, with emphasis on the techniques of presenting information graphically as well as in a clear, concise written form.

***GN 232. DEMOCRATIC GOVERNMENT.** Class 2, cr. 2.

A study of the development of democratic government in the U.S. and other democratic areas of the world.

GN 240. LABOR RELATIONS PROBLEMS. Class 3, cr. 3.

Problems of workers with possible solutions as suggested by organized labor and management. Regulations concerning management, labor, the collective bargaining agreement, grievance and arbitration procedures.

GN 260. ECONOMICS OF INDUSTRY. Class 2, cr. 2.

Fundamental economics principles which affect everyone, with particular emphasis upon their application to industry.

GN 264. CONFERENCE SPEAKING. Class 2, cr. 2. Must be preceded by GN 204.

Training and practice in conducting and participating in small group conferences, shop committees, instructional groups, problem-solving groups.

GN 268. ELEMENTS OF LAW. Class 3, cr. 3.

An introductory law course, with a brief comparison of the American federal system and the parliamentary system of government; and covering law, with emphasis on judicial review, court jurisdiction, and procedure generally and basic law in particular.

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*GN 268. Elements of Law, may be substituted for GN 232.

PHYSICAL SCIENCES

Lecturers: (Calumet) Adams, Belovich, Belshaw, Bradford, Crane, Fitzpatrick, Garst, Gassler, Goeckner, Golding, Hoffman, Kaminski, Kimberly, Minter, Mitchell, Ranck, Ryan, Speer, Steel, Stone, Teller, Wallace, Wierzbicki; (Fort Wayne) Dailey, Statz; (Indianapolis) Bunde, Dunlop, Kern, Thompson, Waldner.

SPECIAL SERVICE COURSES

PS 4. CHEMISTRY OF STEEL I. Class 2, $30. Must be preceded or accompanied by PS 30.

General basic principles of chemistry necessary to understand the various proccesses in the manufacture of steel.

PS 6. CHEMISTRY OF STEEL I. Class 4, $60. Must be preceded or accompanied by PS 30.

General basic principles of chemistry necessary to understand the various proccesses in the manufacture of steel.

PS 30. APPLIED MATHEMATICS I. Class 1-5, cr. 0.

Fundamental concepts of elementary algebra and geometry of mensuration. Applications.

PS 36. PHYSICS: ELECTRICITY. Class 3, $45. Must be preceded or accompanied by PS 30.

Elements of electricity and their applications to industry.

PS 40. PHYSICS: MECHANICS. Class 3, $45. Must be preceded by PS 60.

Basic principles of mechanics, properties of materials, and selected elements of heat related to practical applications in steel mills. Includes units, vectors, torque, velocity and acceleration, force and motion, rotation of rigid bodies, uniform circular motion, friction, work and power, energy momentum, elastic properties of solids, liquids at rest, fluids in motion, properties of gases, and selected elements of heat. Emphasis on vectors, torque, and elastic properties of solids.

PS 44. PHYSICS: ELECTRICITY. Class 2, $30.

Survey of the elements of electricity.

PS 45. PHYSICS: BASIC ELECTRICITY. Class 2, $30.

Survey of basic electricity, with emphasis on industrial application.

PS 46. PHYSICS: MECHANICS. Class 2, $30.

Basic principles of mechanics, properties of materials, and selected elements of heat related to practical applications in steel mills. Includes units, vectors, torque, force and motion, power, and elastic properties of solids.

PS 50. APPLIED MATHEMATICS II. Class 1-5, cr. 0.

Fundamental concepts and techniques of algebra with applications to industrial problems.

PS 52. PHYSICS: MECHANICS AND ELECTRICITY. Class 4, $60. Must be preceded by PS 28.

Basic principles of mechanics and selected elements of electricity and magnetism. Basic principles are related to practical applications in steel mills. Covers vectors, torque, velocity and acceleration, force and motion, friction, work and power, energy, rotation of rigid bodies, momentum, uniform circular motion, vibratory motion, elastic properties of solids, liquids, fluids in motion, properties of gases, molecular theory of matter, static electricity, DC circuits, electrical energy and power, magnetism, electro-magnetic induction, transformers, generators and motors, capacitance, alternating currents, and rectifiers.

PS 60. APPLIED MATHEMATICS III. Class 1-5, cr. 0.

Fundamental concepts and techniques of algebra and trigonometry necessary for related courses and work.

PS 70. APPLIED MATHEMATICS IV. Class 1-5, cr. 0.

Fundamental concepts and techniques of trigonometry with applications.

PS 72. CONTROL OF QUALITY IN STEEL PRODUCTION. Class 2, $30. Must be preceded by PS 28.

Fundamentals of the control of quality in steel production.

UNDERGRADUATE LEVEL

Lower-Division Courses

PS 120. INTRODUCTION TO CHEMISTRY. Class 2, Lab. 3, cr. 3. Must be preceded or accompanied by MA 111.

The general basic principles of chemistry, including a study of important elements and their simpler compounds. Special emphasis is placed on industrial applications.

PS 136. PHYSICS: MECHANICS AND HEAT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Must be preceded or accompanied by MA 111 and CE 113.

Work, energy, power, efficiency of simple machines; equilibrium conditions for solids, liquids, and gases; straight line and rotational motion—uniform and accelerated motion. Elementary principles of heat and their technical applications.

PS 176. PHYSICS: ELECTRICITY, SOUND, AND LIGHT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Must be preceded by PS 136, except ET students.

Fundamental principles of electricity, wave motion, sound, and light.

PS 284. INSTRUMENTATION. Class 2, Lab. 3 cr. 3.

Basic principles of instruments selected. Care and use as found in industry for physical measurement.

COURSES ADMINISTERED OUTSIDE THE DIVISION OF APPLIED TECHNOLOGY

The courses listed below are offered by four of the schools of the University and are the ones commonly taken by applied technology students as requirements, optional courses, or electives. More complete information about these courses can be had by consulting the bulletins of the schools in which the courses are given.

Civil Engineering

CE 113. SLIDE RULES AND GRAPHS. Lab. 2, cr. 1.

Economics

ECON 210. PRINCIPLES OF ECONOMICS. Class 3, cr. 3.

English

ENGL 101. ENGLISH COMPOSITION I. Class 3, cr. 3.

ENGL 202. ENGLISH COMPOSITION II. Class 3, cr. 3.

ENGL 421. BUSINESS WRITING: ENGINEERING APPLICATIONS. Class 3, cr. 3.

Mathematics

MA 10. INDUSTRIAL MATHEMATICS I. Class 4, cr. 0.

MA 20. INDUSTRIAL MATHEMATICS II. Class 4, cr. 0.

MA 30. INDUSTRIAL MATHEMATICS III. Class 4, cr. 0.

MA 111. ALGEBRA. Class 3, cr. 3.

MA 112. TRIGONOMETRY. Class 3, cr. 3.

MA 151. ELEMENTARY MATHEMATICS FOR ENGINEERING AND THE PHYSICAL SCIENCES I. Class 5, cr. 5 or Class 4, Lab. 2, cr. 5.

MA 152. ELEMENTARY MATHEMATICS FOR ENGINEERING AND THE PHYSICAL SCIENCES II. Class 5, cr. 5.

MA 221. ANALYTIC GEOMETRY, DIFFERENTIAL CALCULUS. Class 3, cr. 3.

MA 222. ANALYTIC GEOMETRY, INTEGRAL CALCULUS. Class 3, cr. 3.

Physics

PHYS 220. GENERAL PHYSICS. Class 3, Lab. 3, cr. 4.

PHYS 221. GENERAL PHYSICS. Class 3, Lab. 3, cr. 4.

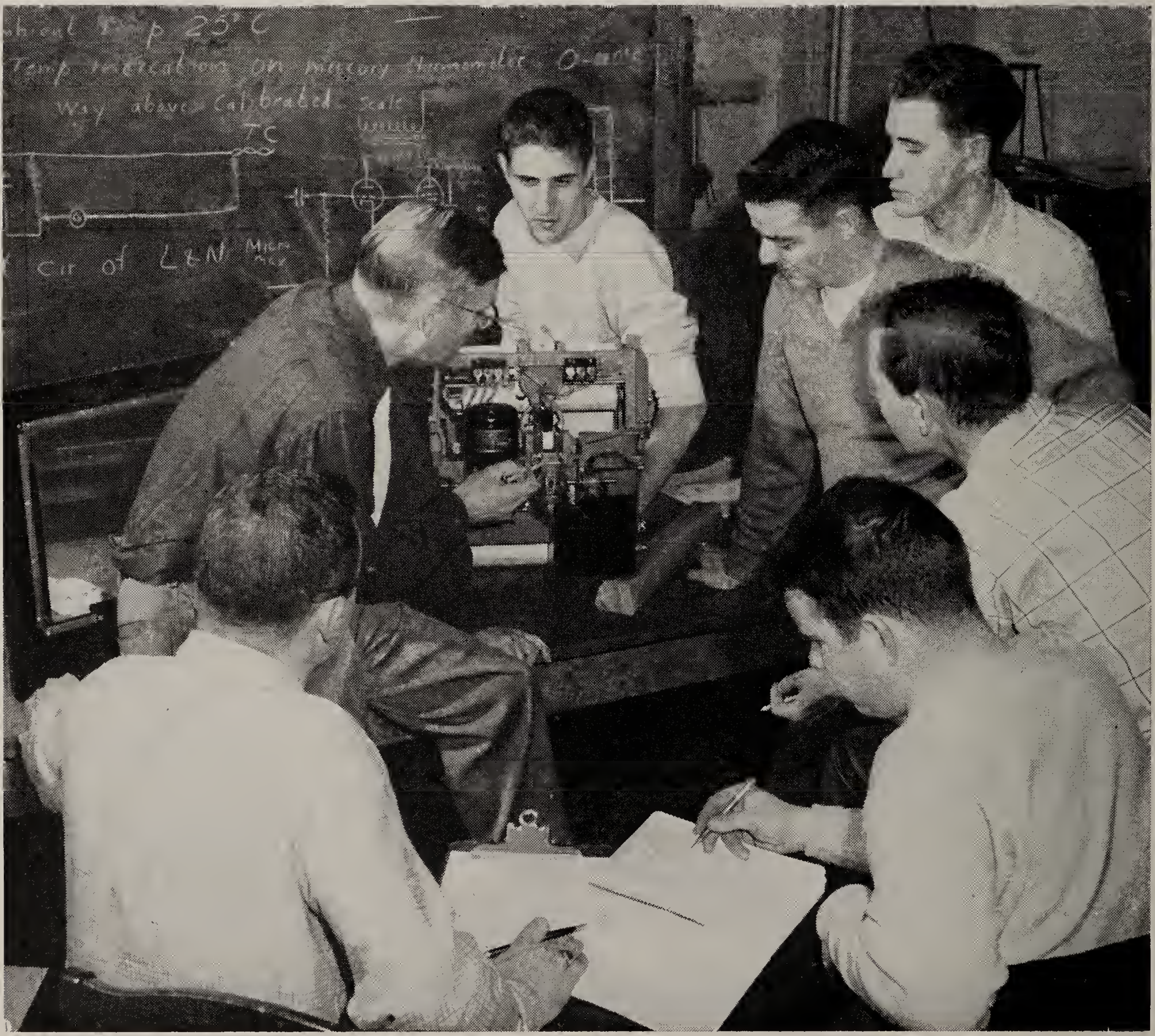
Psychology

PSY 120. ELEMENTARY PSYCHOLOGY. Class 3, cr. 3.

Speech

SPE. 114. PRINCIPLES OF SPEECH. Class 3, cr. 3.

Familiarity with control instruments is important to a future technician



UNIVERSITY EXTENSION COUNCIL
1960-61

Ex-Officio

C. H. Lawshe, Ph.D.	Dean of University Extension
F. K. Burrin, Ph.D.	Assistant Director of Summer Sessions and Evening Classes
G. E. Davis, Ph.D.	Director of Division of Adult Education
C. H. Elliott, Ph.D.	Director of Calumet Center
R. L. Ewigleben, D.Ed.	Director of Fort Wayne Center
L. J. Freehafer, A.B.	Business Manager and Assistant Treasurer to the Board of Trustees
L. E. Hoffman, B.S.A.	Director of Agricultural Extension Service
C. L. Larsen, Ph.D.	Director of Indianapolis Center
N. M. Parkhurst, M.S.	Registrar
H. C. Rountree, B.S.	Head of Department of Engineering Technology
R. F. Schwarz, M.S.	Director of Barker Memorial Center
D. A. Scott, Ph.D.	Assistant Dean of University Extension
H. W. White, M.S.	Director of Admissions
E. C. Young, Ph.D., LL.D.	Dean of Graduate School

Appointed by the President, for One Year

Margaret E. Beeman, M.S.H.E.	Assistant to the Dean of Home Economics
Harry S. Belman, M.S.	Associate Professor of Industrial Education
John L. Bogdanoff, Ph.D.	Professor of Engineering Sciences
M. W. Keller, Ph.D.	Professor of Mathematics
R. L. Livingston, Ph.D.	Professor of Chemistry
D. C. Pfendler, M.S.	Assistant Dean of Agriculture
J. A. Ritchey, Ph.D.	Associate Professor of Industrial Engineering

Appointed by the President, for Two Years

C. B. Cox, Ph.D.	Professor of Agricultural Economics
H. M. James, Ph.D.	Head of Department of Physics
Henry Koffler, Ph.D.	Head of Department of Biological Sciences
K. M. Michels, Ph.D.	Professor of Psychology
John F. Stover, Ph.D.	Professor of History

Appointed by the President, for Three Years

G. W. Bergren, M.S.M.E.	Professor of Mechanical Engineering
H. George DeKay, Ph.D.	Professor of Pharmacy
J. Robert Eaton, Ph.D.	Professor of Electrical Engineering
James R. Maris, B.S.	Head of Department of Aviation Technology
Irving A. Morrissett, Ph.D.	Associate Professor of Economics
J. Howard Porsch, M.S.C.E.	Professor of Engineering Graphics

INSTRUCTIONAL ORGANIZATION

Under the terms of the Purdue University Code, faculty authority for the control of all applied technology courses and curricula is vested in the University Extension Council. The members of this Council, consisting of fourteen ex-officio members and eighteen appointed by the President of the University, are listed on the preceding page.

The business of the University Extension Council is conducted at eight scheduled meetings each year. Most proposals involving academic matters flow to the Council through committees appointed annually by the Dean of University Extension. Listed below are the 1960-61 Committees that are concerned with curricular and instructional matters in the applied technology curricula.

COMMITTEE ON AVIATION TECHNOLOGY CURRICULA

J. R. Maris—Assistant Professor of Aviation Technology—*chairman*
Ernest R. Blatchley—Instructor in Aviation Technology
William P. Duncan—Instructor in Aviation Technology
Jill McCormick—Instructor in Aviation Technology
Albert Toth—Instructor in Aviation Technology
Irwin E. Treager—Instructor in Aviation Technology
Ervin E. Wheelock—Instructor in Aviation Technology

COMMITTEE ON ENGINEERING TECHNOLOGY CURRICULA

C. L. Larsen—Director of the Indianapolis Center—*chairman*
J. L. Bogdanoff—Professor of Engineering Sciences
M. W. Keller—Professor of Mathematics
K. M. Michels—Professor of Psychology
H. C. Rountree—Head, Department of Engineering Technology
D. A. Scott—Assistant Dean of University Extension

SUB COMMITTEE ON BUILDING CONSTRUCTION TECHNOLOGY AND CIVIL TECHNOLOGY CURRICULA

Lloyd W. Smith—Assistant Professor of Building Construction Technology (Fort Wayne Center)—*chairman*
Charles R. Hutton—Instructor in Building Construction Technology (Calumet Center)
Max H. Norris—Assistant Professor of Engineering Drawing (Indianapolis Center)
J. Howard Porsch—Professor of Engineering Graphics
Lloyd W. Scholl—Assistant Professor of Building Construction Technology (Indianapolis Center)

SUB COMMITTEE ON DRAFTING AND MECHANICAL TECHNOLOGY CURRICULA

Herman W. Stoelk—Instructor in Drafting and Mechanical Technology (Indianapolis Center)—*chairman*
G. W. Bergren—Professor of Mechanical Engineering
John W. Johnson—Instructor in Mechanical Engineering (Fort Wayne Center)

Frederick R. Lisarelli—Assistant Professor of Drafting and Mechanical Technology (Barker Memorial Center)
Clarence H. Zacher—Assistant Professor of Engineering Technology (Calumet Center)

SUB COMMITTEE ON ELECTRICAL TECHNOLOGY CURRICULA

Robert L. Anderson—Associate Professor of Engineering Technology (Calumet Center)—*chairman*
J. Robert Eaton—Professor of Electrical Engineering
Howard L. Wisner—Associate Professor of Electrical Technology (Indianapolis Center)
Orris S. Young—Instructor in Electrical Technology (Fort Wayne Center)

SUB COMMITTEE ON INDUSTRIAL TECHNOLOGY CURRICULA

Dale G. Wilson—Instructor in Industrial Technology (Fort Wayne Center) —*chairman*
Harry S. Belman—Associate Professor of Industrial Education
John F. Jenks—Assistant Professor of Industrial Technology (Indianapolis Center)
John T. Malone—Assistant Professor of Industrial Technology (Calumet Center)
J. A. Ritchey—Associate Professor of Industrial Engineering

APPLIED TECHNOLOGY INSTRUCTIONAL STAFF

ADAM J. ADAMS (1953)...........Lecturer in Physical Sciences (Calumet Center)
B.S.M.E., Illinois, 1951.
B.S.M.E., Notre Dame, 1952.

ROBERT L. ANDERSON (1947)......Associate Professor of Engineering Technology (Calumet Center)
B.S.E.E., Rose Polytechnic Institute, 1942 (P.E., Indiana).

ROBERT ARMSTRONG (1960)....Lecturer in Building Construction Technology (Calumet Center)
B.A.Arch. Engr., Illinois, 1958.

CHARLES ASHERMAN (1957).....Lecturer in Chemical and Metallurgical Technology (Calumet Center)
B.S.M.E., Illinois, 1951

EMIL B. BARNEY (1959)..........Lecturer in Building Construction Technology (Calumet Center)
B.S.Ed., Ball State, 1950.

MAX W. BEATY (1957)............Lecturer in General Studies (Calumet Center)
A.B., Michigan, 1938; M.S., Indiana, 1945.

JOSEPH BELOVICH (1960)........Lecturer in Physical Sciences (Calumet Center)
B.S.E.E., Purdue, 1958.

JACK W. BELSHAW (1958)........Lecturer in Electrical Technology and Physical Sciences (Calumet Center)
B.S.E.E., Purdue, 1958.

CARLETON BERGSTEDT (1956)..Lecturer in Electrical Technology (Calumet Center)
B.S.E.E., University of Illinois, 1954.

ERNEST R. BLATCHLEY (1956)....Instructor in Aviation Technology
B.S., Illinois, 1953 (A. & P. Certificate; CAA Mechanic Examiner with Inspector's Cerficate).

LOREN O. BLAASE (1958)........Lecturer in Industrial Technology (Marott Center)
B.S., Eastern Illinois State, 1943; M.B.A., Indiana, 1956.

JOHN W. BOECKEL (1956).......Lecturer in Drafting and Mechanical Technology (Fort Wayne Center)
B.M.E., City College of New York, 1950.

JOHN BORKERT (1942)..........Lecturer in Drafting and Mechanical Technology (Calumet Center)

EUGENE T. BOROVIAK (1956)....Lecturer in Electrical Technology (Calumet Center)
B.S.E.E., Purdue, 1939.

DONALD W. BOWLES (1955)......Lecturer in General Studies (Marott Center)
A.B., Indiana, 1942; A.M., 1946.

RUSSELL BOWSER (1955)..Assistant Professor of General Studies (Calumet Center)
B.S., Pennsylvania State Teachers (Lock Haven), 1928; LL.B., Valparaiso, 1936; M.A., Stanford, 1946; J.D., Valparaiso, 1949.

WILLIAM BRADFORD (1957).....Lecturer in Physical Sciences (Calumet Center)
B.S., South Carolina, 1944; B.S.Ch.E., Tennessee, 1949.

WAYNE A. BRODHECKER (1956)..Lecturer in Engineering Technology (Marott Center)
A.B., Hanover, 1943; M.S., Purdue, 1955.

ROY L. BROKAW (1957)..........Lecturer in Drafting and Mechanical Technology (Fort Wayne Center)
B.S., Bradley, 1949.

RICHARD A. BUCICH (1956)........Assistant Professor of Engineering Technology (Calumet Center)
B.S.E.E., Illinois Institute of Technology, 1954; M.S.E.E., 1956.

DAVID G. BURNS (1960)..........Lecturer in General Studies (Marott Center)
A.B., Wabash, 1949; M.S., Purdue, 1954.

GEORGE R. BUTLER (1958)......Lecturer in Industrial Technology (Calumet Center)
B.S.M.E., Michigan College of Mining and Technology, 1953; B.S.E.A., 1953; M.S.B.A., Chicago, 1956.

GEORGE CALLENTINE (1958)....Lecturer in Building Construction Technology (Calumet Center)

ALBERT CANNELLA (1960)......Lecturer in Drafting and Mechanical Technology (Calumet Center)
B.S., Mississippi, 1943; M.A., Columbia, 1949.

NATHAN A. CARRAS (1957)......Lecturer in Building Construction Technology (Calumet Center)
B.A., Illinois, 1956.

DOROTHIE A. CLAYTON (1955)..Instructor in Practical Nursing (Calumet Center)
R.N., Methodist Hospital, 1926.

ROBERT S. COBURN (1955)......Lecturer in Engineering Technology (Purdue-Barker Memorial Center)
B.S.E., Akron, 1954.

DONALD COLE (1957)............Lecturer in Electrical Technology (Calumet Center)
B.S.E.E., Purdue, 1950.

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